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**Relationship of Family Variables, Cognitive Triad, and Depressive Symptoms in Pre- and Early Adolescent Girls**

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# Relationship of Family Variables, Cognitive Triad, and Depressive Symptoms in Pre- and Early Adolescent Girls

by

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Dissertation

Presented to the Faculty of the Graduate School of

the University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

Doctor of Philosophy

The University of Texas at Austin

August 2007

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Publication No._____

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The University of Texas at Austin, 2007

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Previous research demonstrates a marked increase in the occurrence of depression during adolescence, particularly for females. Theorists contend that this phenomenon is associated with the development of beliefs about the self, world, and future (known as the cognitive triad), which constitutes a potential cognitive vulnerability to depression. Research has also demonstrated that family characteristics, such as cohesion, communication, conflict, social/recreational activity, parental messages, parental modeling of beliefs, and maternal depression are all related to depression and the development of depressive cognitions. The purpose of the current study was to build upon previous literature on family and cognitive correlates of depression in youth and analyze specific cognitive-interpersonal pathways to depression for girls transitioning from childhood to adolescence. 165 girls ranging in age from 8 to 14 participated in the

study, along with their mothers. Participants completed self-report measures of family environment, beliefs about the self, world, and future, and perceived parental messages regarding the cognitive triad. Mothers completed a self-report measure of psychopathology and an instrument assessing their beliefs about the self, world, and future. Participants also completed a diagnostic interview, which served as the primary measure of depressive symptoms. As found in similar studies and consistent with Beck's theory of depression, daughter's reports of cognitive triad predicted the severity of her depressive symptoms. Moreover, the cognitive triad was found to be the mediating variable in the model; family variables affected daughter's beliefs, which then affected depressive symptomology. Specifically, girls who endorsed higher family conflict, lower social/recreational activity, and more negative parental messages reported more negative cognitive styles and subsequently higher levels of depression. Further results indicated that daughter's beliefs about the self and parent's messages about the future are particularly important factors in this model of depression. Contrary to what was expected, mother's reports of depression and cognitive triad did not predict daughter's cognitive triad or depressive symptoms. Implications of these results and recommendations for future research are provided.

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# CHAPTER 1

## Introduction

Depression among children and adolescents is a serious and prevalent disorder associated with many negative psychosocial outcomes. In fact, depression is reported to be the most common type of mental health problem that occurs during adolescence (Lewinsohn, Hoberman, & Rosenbaum, 1988), affecting approximately 8% of adolescents at any one point (Birmaher, Ryan, & Williamson, 1996) and up to 28% of the population by age 18 (Lewinohn & Clarke, 1999). Gender and adolescence are both important variables in the conceptualization, assessment, and treatment of this impairing disorder (Culbertson, 1997). Significantly more females than males experience depressive disorders (Hankin et al, 1998), while females also experience greater severity of symptoms (Kandel & Davies, 1982) and a different pattern of symptoms (Ostrov, Offer, & Howard, 1989) than males. Moreover, researchers have consistently found that these gender differences emerge during the transition to adolescence (Nolen-Hoeksema, 1995; Petersen et al., 1993). Relatively equal numbers of girls and boys experience depression in childhood, but by the end of adolescence, girls are twice as likely to experience a depressive disorder (Birmaher, Ryan, & Williamson, 1996; Stark, 1990). One of the unique advantages of this investigation is that it examines a population of females in a critical stage of development directly prior to when the gender-gap in depression begins to emerge.

Extensive research has examined the multiple pathways that lead to the onset of depressive disorders (for a review, see Stark, Sander, Yancy, Bronick, & Hoke, 2000).

This body of research identifies risk factors for depression and guides the development of appropriate prevention programs and interventions (Hammen & Rudolph, 2003). Indeed, the etiology of depression is an extremely important topic to research, because the more researchers understand about the pathways that lead to the onset of depression, the more effective they become in tailoring effective interventions. Some of the major theoretical approaches regarding the etiology of depression include biological models (genetics and neurochemistry), cognitive models, behavioral/interpersonal models, family models, and life stress models (Hammen & Rudolph, 2003). This proposed research study will explore a multi-dimensional developmental model of depression that integrates these various theories.

The biological and environmental influences of the family are extremely important factors to consider when conceptualizing the etiology of depression in youth. Children's interactions with their family can serve as either a vulnerability or protective factor in regard to the development of depressive symptoms (Toth & Cicchetti, 1996). A large body of research analyzes the effects of familial interactions and specific parenting factors on depression during childhood and adolescence (Ferguson & Horwood, 1999; Puig-Antich et al., 1985; Shaw & Scott, 1991), including evidence from clinical observations that indicate that many depressed youths are raised in disturbed family environments (for a review, see Stark & Brookman, 1992). Families of depressed children have been found to have less cohesion, less communication, and fewer social recreational activities than families of non-depressed children (Barerra & Garrison-Jones, 1992). Moreover, these families are characterized as less supportive, more critical, and have more conflictual interactions (Avison & McAlpine, 1992). The effects of these

interactions seem to be particularly powerful for young females, purportedly because girls tend to place an added emphasis on social relationships in general (Rudolph & Hammen, 1999) and family relationships in particular (Kavanagh & Hops, 1994).

Research has also supported a biological model of depression by demonstrating that depression tends to run in families (for a review, see Sullivan, Neale, & Kendler, 2000). The literature clearly indicates that children of depressed parents are far more likely than children in the general population to experience a host of adverse psychosocial outcomes, including depression (for a review, see Beardslee, Versage, & Gladstone, 1998). However, it is difficult to separate the genetic transmission of depression across generations from the psychosocial factors that are common to families with a depressed parent. This proposed experiment will consider the effect of parental depression, in conjunction with other environmental influences of the family, to determine their unique effects on the etiology of depression in young females.

Moreover, additional research is needed to explore the specific pathways between family environment and depression for female adolescents, including the hypothesis that this relationship is mediated by other variables. Multiple cognitive diathesis-stress models of depression focus on the specific cognitions present in individuals with an increased vulnerability to developing depression (e.g. Abramson, Metalsky, & Alloy, 1989; Beck, 1967, 1987). Specifically, these theories concentrate on the variability that people display in response to stress, be it within the family environment or otherwise, that lead some people to become depressed when experiencing negative life events while others are able to escape the experiences symptom-free. Beck's theory of depression focuses on the schemas of individuals, postulating that people who possess depressogenic

cognitions are at increased vulnerability to depression when faced with negative life events (Beck, 1967, 1987). Within the theory, depressogenic cognitions are often defined as distorted negative perceptions of the self, world, and future, also known as the cognitive triad (Beck, 1967, 1987).

Numerous studies have supported Beck's theory regarding cognitive vulnerability to depression. Individuals who possess dysfunctional attitudes, negatively distorted information processing, and/or a negative cognitive triad have been shown to experience more depressive symptoms on average (Abela & Dallesandro, 2002). Moreover, these high-risk individuals are also at a greater risk to experience a first onset and recurrence of a depressive disorder in the future (Alloy et al., 2000). Cognitive theorists postulate that the gender shift that occurs within prevalence rates of depression during adolescence may be attributed to the developmental emergence of these cognitive constructs.

In order to better conceptualize the overall etiology of depression in youths, it becomes imperative to understand the factors and precursors that ultimately lead to cognitive vulnerability to depression in children and adolescents. Theorists agree that the negative schemas or cognitive styles that constitute an increased vulnerability to depression are primarily learned via childhood experiences. Moreover, it appears as though parental and familial interactions play a particularly significant role in the development of these cognitions in young females (Gamble & Roberts, 2005).

The literature presents multiple pathways through which parents influence their offspring's cognitive styles. One of those avenues appears to be the overall family environment. Children who are raised in households characterized as low in warmth and/or high in criticism tend to develop more depressogenic cognitive styles than children

in alternate environments (Whisman & Kwon, 1992). Therefore, parents who are critical or impose perfectionistic standards on their children may influence their children to adopt those same standards in themselves, resulting in the formulation of dysfunctional attitudes (Ingram, Overbey, & Fortier, 2001). Another hypothesized pathway is the presence of a depressed parent. This is supported by the findings that illustrate that a mother's depressive symptoms can be correlated with cognitive vulnerability in her offspring (Garber & Flynn, 2001). The third avenue considered in this experiment is the hypothesis that offspring learn their cognitive style by modeling the cognitive styles of their parents. Accordingly, most studies testing this theory have found a correlation between a mother's cognitive style and those of her children (e.g. Alloy et al., 2001). Lastly, the parental inferential feedback hypothesis is a theory associated with the development of depressogenic cognitions in youth. In this theory, children learn their cognitive styles from the feedback that parents provide them about the causes and consequences of negative events in their lives. Overall, research has supported this model and has found a relationship between parents' inferential feedback and their children's depressogenic schemas (e.g. Stark, Schmidt, & Joiner, 1996).

Therefore, this proposed study will examine a model of depression that combines these important theoretical constructs. First, the relationship between depressogenic cognitions and depression will be re-examined within a population of strictly pre-adolescent females. Secondly, specific familial and parental variables will be explored to determine their impact on both daughter's cognitions and severity of daughter's depressive symptoms. Specifically, parents' cognitive styles, the messages that parents communicate to their daughters regarding the cognitive triad, parental depression, and

relevant familial environment variables will be analyzed to determine both their direct and indirect effect (via daughter's cognitive styles) on the development of depressive symptoms in daughters.

By examining these variables, this study tests a model of depression. Building upon existing research on family and cognitive correlates of depression in youth, this proposed investigation attempts to elucidate specific cognitive-interpersonal pathways to depression. Overall, this study seeks to further delineate the complex relationship among family functioning, cognitions, and depression in adolescent females.

# CHAPTER 2

## Review of the Literature

### *Depression in Youth*

Depression in youth is a prevalent yet impairing disorder associated with negative correlates and outcomes. Although depression has been recognized for centuries, it has only been in the past two decades that investigators have begun to make significant progress in the conceptualization of the disorder, especially in regard to the clinical understanding of depressed youths (Alloy, 1988). Depressed children have been a relatively neglected population, having gone largely under-researched and untreated until relatively recently (Beardslee, Keller, & Lavori, 1993). Alarmingly, depressive disorders during childhood have a greater impact and last longer than depressive disorders in adults (Jensen, Ryan, & Prein, 1992). Furthermore, depressed children and adolescents are at a higher risk for the development of other psychological disturbances (Kovacs et al., 1984) and for the development of depressive disorders later in their lives (Pine, Cohen, Gurley, Brook, & Yuhu, 1998). Overall, depression among children is a common, enduring, and recurring disorder (Kovacs et al., 1984) detrimental to psychosocial development (Puig-Anitch et al., 1985) and associated with self-destructive and life-threatening behaviors (Carlson & Cantwell, 1982).

The three primary unipolar depressive disorders for children and adolescents are Major Depressive Disorder (MDD), Dysthymic Disorder, and Depressive Disorder Not Otherwise Specified (DDNOS) (DSM-IV-TR; American Psychiatric Association, 2000).

In accordance with the Diagnostic and Statistical Manual of Mental Disorders Fourth Edition Text Revised (DSM-IV-TR, 2000), the essential characteristic of MDD is a period of at least two weeks during which there is either depressed mood or the loss of interest or pleasure in nearly all activities (anhedonia). However, the mood disturbance for children and adolescents may be irritability rather than sadness (DSM-IV-TR, 2000). The individual must also experience at least four additional symptoms drawn from a list that includes: changes in appetite or weight, sleep, and psychomotor activity; decreased energy; feelings of worthlessness or guilt; difficulty thinking, concentrating, or making decisions; or recurrent thoughts of death or suicidal ideation, plans, or attempts (DSM-IV-TR, 2000).

MDD is the most common type of depressive disorder, and the average duration of an episode lasts 32 to 36 weeks (Kovacs et al., 1984; McCauley, Mitchell, Burke, & Moss, 1993; Strober, Lampert, Schmidt, & Morrell, 1993). The mean age of onset for MDD is between 14 and 15 years of age in community samples, with females tending to have an earlier age of onset (Lewinsohn, Clarke, Seeley, & Rohde, 1994). Depressive episodes tend to remit naturally in children and adolescents; however, many youths experience multiple episodes of depression (Kovacs, 1989). It has been shown that 20% to 60% of youths experience a second episode of depression within two years after remission of an initial episode of MDD (AACAP, 1998). Within five years after remission, this percentage increases to 70% (AACAP, 1998).

Dysthymic Disorder is a more chronic, low-grade depression. The hallmark feature of Dysthymic Disorder is a chronically depressed mood that occurs for most of the day, more days than not, for at least two years. However, the mood in children and

adolescents may be irritable rather than depressed, and the required minimum duration is only one year (DSM-IV-TR, 2000). During this period of mood disturbance, at least two of the following additional symptoms are present: poor appetite or overeating, insomnia or hypersomnia, low energy or fatigue, low self-esteem, poor concentration or difficulty making decisions, and feelings of hopelessness (DSM-IV-TR, 2000).

The average episode length for Dysthymic Disorder is three years (Kovacs et al., 1984; Kovacs et al., 1994). The study of Dysthymic Disorder is particularly important because research demonstrates that it may be more insidious than MDD in terms of its long-term effect on psychosocial adjustment of children and adolescents (Kovacs et al, 1984). Children and adolescents with Dysthymic Disorder are also have an increased risk for developing MDD.

Individuals are diagnosed with DDNOS if they are experiencing symptoms of depression that are present more often than not and are causing significant impairment, but do not meet criteria for MDD or Dysthymic Disorder. See Appendices B-D for the detailed diagnostic criteria of these three disorders.

*Epidemiology*

More children and adolescents are experiencing episodes of depressive disorders than ever before and the average age of onset is becoming younger (Klerman & Weissman, 1989). Depression has been described as the most common mental health problem among adolescents (Lewinsohn et al., 1988). Prevalence rates among children and adolescents vary in accordance with the population studied, method of assessment, and method of diagnosis (Poznanski & Mokros, 1994). A number of epidemiological studies have reported that up to 2.5% of children and up to 8.3% of adolescents in the

U.S. suffer from depression (Birmaher, Ryan, & Williamson, 1996). Specifically, the prevalence rates of MDD and Dysthymic Disorder for children in elementary school range from 0.4% to 1.85% and 0.6% to 2.5%, respectively (Anderson, Williams, McGee, & Silva, 1987; Costello et al., 1988; Kashani et al., 1983; Kashani, Orvaschel, Rosenberg, & Reid, 1989). Prevalence rates for adolescent depression range from 2.9% (Lewinsohn, Hops, Roberts, Seeley, & Andrews, 1993) to 8% (Kashani et al., 1989). One study estimates that the prevalence rate of any depression in 9- to 17-year-olds is more than 6% in a 6-month period, with 4.9% having major depression (Shaffer, Fisher, & Dulkan, 1996), while another investigation estimates that 20% of children and adolescents will have experienced an episode of major depression prior to completing high school (Seligman, 1998). The National Comorbidity Study (NCS) and the Oregon Depression Project reported the cumulative prevalence rate of major depression for adolescents up to age 18 is 28% (Lewinsohn & Clark, 1999). The average duration of a depressive episode in clinical and epidemiological samples of children is between 8-13 months (Kovacs et al., 1984; Goodyer et al., 1997).

*Course*

Several differences exist between the manifestation of depression in children versus adults. Young children's affect has been found to be generally higher than that of adults (Digdon & Gotlib, 1985; Rholes, Blackwell, Jordan, & Walters, 1980). Therefore, children's sadness is not expected to be as intense or persistent as adult depression (Digdon & Gotlib, 1985; Rholes et al., 1980). It also appears as though younger children demonstrate more sadness, while older children have more cognitive features of depression, such as thoughts of being unloved or worthlessness (Digdon & Gotlib, 1985).

This finding is consistent with the cognitive shifts hypothesized to occur during adolescence.

Depression in youth has been shown to negatively effect adjustment throughout the lifespan. Adults who were depressed as children or adolescents are more likely to suffer from recurrent episodes of depression (Garber, Kriss, Kock, & Lindholm, 1988; Rao et al., 1995). Depression in children and adolescents is also related to impairment in romantic and peer relationships, lower life satisfaction, impaired occupational functioning, lower ratings of overall functioning, poor physical health, criminal activity, and potential suicide later in life (Gotlib, Lewinsohn, & Seeley, 1998; Kandel & Davies, 1986; Lewinsohn Rohde, Seeley, Klein, & Gotlib, 2003; Rao et al., 1995). Some studies have demonstrated that early age of onset is correlated with a more protracted course of depression (Lewinsohn, Rohed, Klein, & Seeley, 1999), while other research has found that earlier age of onset does not necessarily predict the length of the depressive episode (McCauley, Myers, Mitchell, Calderon, Schloredt, & Treder, 1993). Regardless, research has clearly demonstrated a variant course of depression in children versus adults.

*Adolescence and Gender*

Adolescence appears to be a meaningful time period in the development of depressive disorders, as it is marked with multiple demographic shifts. Typically, prevalence rates gradually increase with age until early adolescence, at which point the rate begins to increase rapidly (Nolen-Hoeksema, 1995; Petersen et al., 1993). Multiple studies have demonstrated that prior to adolescence, boys and girls experience relatively equal rates of depression; and one study even found that pre-adolescent boys are more likely to be depressed than pre-adolescent girls (Kashani, Cantwell, Shekim, & Reid,

1982). However, a major switch occurs, and by the end of adolescence, girls are far more likely to be depressed than boys (Hankin et al., 1998; Nolen-Hoeksema, 1990; Peterson et al., 1993). The higher prevalence of depression within the female population, which emerges in adolescence, continues through adulthood as a consistent finding across cultures (Nolen-Hoeksema, 1990). In fact, studies indicate that by adulthood, depressive episodes are up to twice as common in women as they are in men (DSM-IV-TR, 2000). Clearly, the significant shifts that occur upon the landscape of depression in adolescence make this time period an important one to research.

Depression in adolescence seems to predict different psychosocial outcomes in adult women and adult men. Specifically, depression in adolescent women is related to increased school dropout, marital distress, hospitalization, and abuse of tranquilizers later in life (Kandel & Davies, 1986). Some studies have reported that females experience more symptoms (Kandel & Davies, 1986), more persistent symptoms (Rushton, Forcier, & Schectman, 2003), and a different pattern of symptoms (Ostrov, Offer, & Howard, 1989; Casper et al., 1996) than males. However, other studies have found no gender difference in the severity of depressive symptoms, probability of recurrent episodes (Hankin et al., 1998), age of onset, rate of recovery, comorbid disorders, or specific symptom patterns (Kovacs, 2001). Kovacs (2001) notes in her discussion that most studies reporting gender differences related to the severity of depression have gathered data in large-scale community studies via self-report questionnaires, while studies utilizing diagnostic interviews within clinical samples have typically found little to no gender differences. Perhaps the gender differences found in community samples fail to translate to gender differences within clinical samples (Kovacs, 2001). Regardless, the

literature indicates clear gender differences regarding the course and prevalence of depression.

*Gender and Vulnerability to Depression*

A substantial body of research has explored the mechanisms through which gender differences in depression emerge (e.g. Hankin & Abramson, 2001; Nolen-Hoeksema & Girgus, 1994). The hypotheses providing the most compelling explanations of gender discrepancies emerging in adolescence are models that consider the vulnerabilities and stressors unique to girls within a diathesis-stress framework (e.g. Hankin & Abramson, 2001; Nolen-Hoeksema & Girgus, 1994). These models assert that females have more cognitive, biological, and interpersonal vulnerabilities prior to adolescence, while facing more stressful events during the transition to adolescence than do boys. This combination leads to the higher rates of depression in adolescent girls.

One of the proposed cognitive vulnerability factors is a ruminative style of coping. This response to life stressors has been shown to be linked to depression and is more common in females than males (Abela, Vanderbilt, & Rochon, 2004; Nolen-Hoekseam, 1987). Nolen-Hoeksema (1987) argues that women are socialized to ruminate about their depressed mood and its cause, rather than actively attempt to solve a problem. Females have also been found to be less instrumental and more expressive than their male counterparts (Hill & Lynch, 1983), another trait associated with depression (Marcotte, Alain, & Gosselin, 1999; Peterson, Sarigiani, & Kennedy, 1991). Overall, adolescent girls may not utilize active coping skills and problem solving as commonly as boys to effectively cope with stressors. Furthermore, these findings regarding rumination and a lack of instrumentality in females may shed light upon the tendency for adolescent

girls to experience negative life events as more stressful than boys (Rudolph & Hammen, 1999).

Not only have studies shown that girls may interpret negative events as more stressful, but other research has found that girls tend to demonstrate a more negative style of thinking about the causes of those stressful events, along with more negative thoughts about the self in response to the event (Hankin & Abramson, 2002). These apparent gender differences in cognitive style help explain some of the discrepancy between gender prevalence rates of depression, as Hankin and Abramson (2002) found this difference in cognition to mediate the gender difference in depressive symptoms. Abela (2001) further supported this hypothesis when she found that negative assumptions about the self interacted with negative life events to predict depression in elementary and middle school girls, but not boys. Girls have also been found to rate themselves as less competent than their peers, teachers, and parents, while boys' ratings of their competence is generally higher than other informers (Cole, Jacquez, & Mascheman, 2001). This body of research highlights some of the cognitive vulnerabilities more common in girls that may give rise to a greater overall vulnerability to depression.

Gender differences regarding unique experiences with puberty and body dissatisfaction are also important areas to consider when exploring the discrepancies in depression between adolescent girls and boys. On average, girls reach puberty earlier than boys and are less content with the changes occurring in puberty (Hayward, Hurrelmann, Currie, & Rasmussen, 2003). Girls who experience menarche at an earlier age than their peers are more likely to experience depression and remain depressed for a longer period of time (Ge et al., 2001; Graber, Lewinsohn, Seeley, & Brooks-Gunn,

1997; Peterson et al., 1991; Stice, Presnell, & Bearman, 2001). Furthermore, a higher prevalence of depression in adolescent girls has been shown to be related to the simultaneous onset of puberty and school change, an experience avoided by most boys (Peterson et al., 1991). Body dissatisfaction also becomes prevalent in early adolescence, particularly for girls, and is strongly linked to depression. Girls tend to place greater emphasis on the perception of their appearance, as girls rate confidence in appearance as the most important contributor to self-worth, while boys rate confidence in ability as most important (American Association of University Women, 1992). Body image has been found to mediate the relationship between gender and depression (Hankin & Abramson, 2001; Siegal 2002; Siegal et al., 1999); while body image, body mass, and dieting behaviors have also been found to mediate the relationship between early menarche and depression (Stice et al., 2001). These findings suggest that dissatisfaction with physical changes and appearance, often occurring in conjunction with puberty, is an important risk factor for the development of depression in girls.

Young girls also tend to experience more interpersonal stress than young boys (Hammen, 1991; Rudolph & Hammen, 1999). Accordingly, girls tend to ruminate and blame themselves for perceived incompetence in negative social interactions (Rudolph & Hammen, 1999). Interpersonal stress is associated with low self-esteem and greater depressive symptoms in adolescent girls, but not boys (Moran & Eckenrode, 1991; Rudolph et al., 2000). Furthermore, depressed female adolescents experience interpersonal stress at a higher level and report to be more distressed by interpersonal conflict (Rudolph & Hammen, 1999; Rudolph et al., 2000). The greater import placed on interpersonal relationships, coupled with the greater interpersonal stress experienced in

these relationships, may also increase adolescent girls' vulnerability to depression (Hops, 1995; Leadbeater, Balatt, & Quinlan, 1995).

*Assessment of Depression in Youth*

There are various viable means of assessing depression and depressive symptoms. Some of the most common approaches include self-report questionnaires, parent and teacher rating scales, observational methods, diagnostic interviews, and projective techniques. The most common techniques utilized to assess depression and depressive symptoms within empirical studies are self-report questionnaires such as the Children's Depression Inventory (CDI; Kovacs, 1981), parent and teacher rating scales such as the Child Behavior Checklist (CBCL; Achen back & Edelbrock, 1983) and/or diagnostic interviews such as the Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present State (K-SADS-P IVR; Ambrosini & Dixon, 2000).

The most successful means of assessment typically include multiple methods and informants. However, low consensus among sources often makes it difficult to accurately assess symptoms (Achenbach, McConaughy, & Howell, 1987). In a meta-analysis exploring the consistency of reports across informants, Achenbach and colleagues (1987) found the average correlation of youth adjustment to be .20 between teacher and youth reports and to be .25 between parent and youth reports. Concordance between parent-child reports may differ depending upon the type of symptom being assessed. For example, greater concordance has been found for externalizing symptoms than internalizing symptoms (Achenbach et al., 1987). It is believed that the child may be the better reporter for subjective symptoms of depression such as sadness, feelings of worthlessness, and anhedonia (Kendall, Cantwell, & Kazdin, 1989). On the other hand,

younger children are not reliable reporters of time-related information, such as the duration and onset of specific symptoms (Stark, Sander, Yancy, Bronik, & Hoke, 2000). Therefore, it may be necessary for parents to provide information about the time frame of symptoms, along with behavioral functioning and observable symptoms. Best practices include taking both child and parent reports into consideration and using clinical judgment to integrate the data received from these multiple informants. When reports are inconsistent among informants, the interviewer can then utilize his or her clinical judgment to discern whether the child or parent is a more accurate reporter in that instance. Different reporters often provide useful perspectives on different symptoms.

The exclusive use of paper and pencil self-report questionnaires is not an ideal means by which to measure depression. One of the limitations of this technique is that paper and pencil measures such as the CDI have shown high correlations with measures of anxiety (Finch, Lipovsky, & Casat, 1989; Reynolds, 1986). Similarly, the CDI has failed to accurately discriminate between depressive disorders and other diagnoses (Kazdin, 1988). Clearly, more data is needed to diagnose an episode of depression than can be obtained from a self-report questionnaire. Self-report questionnaires can be very useful for rapid assessment of symptoms and large-scale screening (Beck, Beck, & Jolly, 2001; Reynolds, 1986); however, clinical interviews are far more accurate in their discrimination between depressive disorders and other disorders.

A multiple gate procedure using various methods of assessment has been recommended as an effective way to efficiently and accurately identify clinically depressed children and adolescents in school settings (Reynolds, 1986). Reynolds (1986) advocates using three stages of assessment for identifying depressed youths in schools.

The first stage entails a wide-scale screening utilizing a self-report measure of depression. This stage allows clinicians to reach a large amount of students in a short amount of time. In the second stage, children who scored above a predetermined cutoff score in Stage One are reassessed using the same questionnaire three to six weeks later. This stage helps to avoid identifying youths as clinically depressed, who in reality are merely experiencing temporary distress. Finally, Stage Three entails conducting diagnostic interviews with children who report clinical levels of depression in the two previous stages.

Although the exclusive use of self-report questionnaires has been listed as a limitation in countless articles and chapters (e.g. Cole & Turner, 1993; Cummings, DeArth-Pendley, Schudlich, & Smith, 2001; Robinson, Garber, & Hilsman, 1995; Turner & Cole, 1994), the great majority of literature on depression continues to be conducted without the use of clinical interviews or multiple informants.

*Summary of Depression in Youth*

Numerous trends occur in the prevalence and course of depression during childhood and adolescence. First, rates of depression typically increase gradually until the occurrence of adolescence, at which point the rate of onset increases dramatically (Nolen-Hoeksema, 1995). Secondly, prevalence rates of depression are relatively equal across genders until adolescence, at which time girls become twice as likely to experience a depressive disorder (Birmaher et al, 1996). Prevalence rates in adult women suggest that women continue to demonstrate an increased vulnerability to depression over the course of their lifespan (Nolen-Hoeksema, 1990). Clearly, adolescence is an important time period in the course of depression marked with powerful demographic shifts.

Researchers have explored mechanisms through which gender differences in depression may emerge. The hypotheses garnering the most support present models focusing on vulnerabilities and stressors unique to girls within a diathesis-stress framework. Specifically, these models assert that girls demonstrate more cognitive vulnerabilities (i.e. a more ruminative style of coping, less instrumentality, more negative cognitive styles/depressogenic cognitions), biological vulnerabilities (i.e. association between menarche and depression, earlier onset of puberty, the combination of puberty and increased body dissatisfaction), and interpersonal vulnerabilities (i.e. experiencing more interpersonal stress, placing more importance on interpersonal relationships, blaming themselves for negative social interactions) than boys prior to adolescence. Girls have also been shown to experience more stressful events during the transition to adolescence than boys (Rudolph & Hammen, 1999). The combination of increased vulnerability and greater stress contributes to the higher rates of depression in adolescent girls.

Depressive disorders in youth can be particularly difficult to assess, primarily due to the subjective nature of the malady. The most common method of assessment is the use of self-report questionnaires to ascertain the presence of depressive symptoms. However, this method has not shown the discriminant validity needed to accurately diagnose the presence versus absence of a depressive disorder (Kazdin, 1988). In order to accomplish a reliable diagnosis, a diagnostic interview is required. The down side of a diagnostic interview is that it is a time-consuming process requiring a trained interviewer. In order to minimize the limitations of both of these assessment devices, a multiple-gate

screening procedure is recommended (Reynolds, 1986). This procedure should balance efficiency and accuracy while integrating the child's report with data from parents.

Indeed, depression in youth is a prevalent and recurrent disorder associated with many psychosocial difficulties across the lifespan. Continued research is needed to better understand the specific psychosocial, cognitive, and/or genetic factors that give rise to depression, particularly during childhood and adolescence.

### *Pathways to Depression*

What causes a person to become depressed? Indeed, this is the "million-dollar" question driving research in the field of depression. It is clear that individuals differ in their responses to negative or stressful circumstances. What causes one person to develop severe or long-lasting depression, whereas others manage to entirely avoid depressive symptomology, is a matter of extensive investigation. Inevitably, increased understanding of the etiological factors of depression leads to more effective treatment and prevention modalities.

Multiple pathways have been identified that may lead to the development of depression in children and adolescents (for a review, see Stark et al., 2000). Some of the major theoretical approaches regarding the etiology of depression include biological models (genetics and neurochemistry), cognitive models, behavioral/interpersonal models, family models, and life stress models (Hammen & Rudolph, 2003). Researchers are striving to create multi-dimensional developmental models that integrate these various theories. Those theories relevant to this investigation will be reviewed and discussed in the following sections.

*Family Influences on Depression*

The parent-child relationship is likely an important context in which cognitive vulnerability to depression develops. Multiple developmental theories agree that representational models are formed based on children's interactions with their caregivers, with these representations affecting behavior across various contexts (Toth & Cicchetti, 1996). Specifically, attachment theory has greatly contributed to the perception of parental influence on childhood development (Bowlby, 1964; 1982; Sroufe, 1990). According to attachment theory, poor quality of caregiving may lead to the development of negative representational models and perceptions of attachment figures, the self, and the self in relation to others (Cicchetti, 1991; Crittenden & Ainsworth, 1989). An assortment of studies have confirmed that parental qualities, such as emotional support and the type of discipline style used, determine children's psychological adjustment (e.g. Borduin, Henggeler, & Pruitt, 1985; Fergusson & Horwood, 1999; Shaw & Scott, 1991).

Accordingly, disturbances in family functioning may act as an avenue to the development of depression in youth. This hypothesis is supported by the fact that many depressed children are reared within a disturbed family environment (Stark & Brookman, 1992). Family environments of depressed youths have been found to have less cohesion, less communication, and less social recreational activity (Barrera & Garrison-Jones, 1992; Cole & McPherson, 1993; Jewell & Stark, 2003; Kaslow et al., 1988; Ostrander & Weinfurt, 1998; Stark et al., 1990). Similarly, families of depressed youths are characterized by greater chaos, abuse, neglect (Kashani, Ray, & Carlson, 1984) and conflict (Forehand, Brody, Long, & Fauber, 1988). The relationships between parents and children in these homes have been characterized as cold, hostile, tense, and at times

rejecting (Puig-Antich et al., 1985). Indeed, one of the most consistently found characteristics among families of depressed youths is an overall lack of support and approval in the home (Armsden, McCauley, Greenberg, Burke, & Mitchell, 1990; Avison & McAlpine, 1992; Hops, Lewinsohn, Andrews, & Roberts, 1990; McFarlane, Bellissimo, Norman, & Lange, 1994; Sheeber & Sorensen, 1998). Depression has been shown to be inversely related to the level of support and approval provided by the family environment in community samples (Avison & McAlpine, 1992; Hops, Lewinsohn, Andrews, & Roberts, 1990; McFarlane, Bellissimo, Norman, & Lange, 1994) and clinical samples (Armsden et al., 1990; Barrera & Garrison-Jones, 1992).

In addition to these correlations between family environment and depression, a prospective relationship exists between both family disturbances and the development of depressive symptoms (Asarnow, Goldstein, Tompon, & Guthrie, 1993; Sheeber, Hops, Alpert, Davis, & Andrews, 1997) and between family disturbances and the recurrence of depressive episodes during adolescence (Sanford et al., 1995). In contrast, healthy relationships between parents and children serve as protective factors (Peterson, Sarigiani, & Kennedy, 1991) and are associated with psychosocial coping resources and positive self-esteem among adolescents (Sheeber & Sorensen, 1998).

Other research has focused on youths' perceptions of their family environments, finding that depressed adolescents (Hops et al., 1990; Sheeber & Sorensen, 1998) and children (Stark, Humphrey, Crook, & Lewis, 1990) see their families as less supportive than non-depressed youths. In one study, these findings were corroborated both concurrently and prospectively over a one-year period (Sheeber, Hops, Alpert, Davis, & Andrews, 1997). Similarly, depressed adolescents report that their families are less

cohesive, their parents are less accepting of them, and that they have fewer satisfying sources of social support than non-depressed adolescents (Sheeber & Sorensen, 1998). This perception was also reported by mothers of depressed adolescents, as they similarly described their families as less cohesive (Sheeber & Sorensen, 1998). However, other research has found that parents and depressed adolescents differ in their perceptions of the family environment. Stark and colleagues (1990) found that children felt less support within the family and greater conflict than reported by mothers. This discrepancy may reflect that parents are often unaware of the dramatic effect of conflict in the family or could be a product of negative distortions on behalf of the depressed adolescent (Stark et al., 1990).

Research clearly demonstrates that parents play a pivotal role in children's vulnerability to depression. When conceptualizing adolescent depression, it is vital to take into account the influence of the family environment. Therefore, not surprisingly, familial relationships and family variables have also been shown to be important factors in the treatment of depression (Kazdin & Weisz, 1998). Parental variables impact the nature and severity of childhood depression, the degree of progress among children in treatment, and the extent to which progress is sustained over time (Kazdin & Weisz, 1998). Thus, to maximize treatment effects, it may be necessary to address parental and family issues within treatment (Kazdin & Weisz, 1998) specifically as they relate to: reducing conflictual behaviors, increasing supportive behaviors, (Sheeber et al., 1997), and altering cognitive constructs (Stark et al., 2000).

*Family Influences: Adolescent Girls*

Further research has demonstrated that family characteristics play a different role in the etiology of depression in boys and girls (Gilligan, 1982; Jones & Costin, 1995; Wong & Csikszentmihalyi, 1991). It seems as if the family plays an increasingly influential role in adolescent girls' adjustment while peers play a greater role in boys' adjustment (Kavanagh & Hops, 1994). Furthermore, the relationship between maternal depression and depression in daughters ages 8 to 13 has been found to be mediated by pre-existing family adversity (i.e. negative life events, marital conflict, and economic stress), while this relationship was not found in boys (Fergusson et al., 1995). Girls often tend to respond to coercive family patterns in a more passive manner than boys, a tendency that translates to more internalizing behaviors for girls in the face of family conflict (Compton, Snyder, Schrepferman, Bank, & Shortt, 2003). Indeed, it is vital to take family characteristics and relationships into account when conceptualizing adolescent depression, especially in reference to adolescent girls.

*Assessment of the Family*

Self-report questionnaires, interviews, and observations are all empirically reviewed methods for assessing the family context. Interviews involving the whole family system are more commonly used as an assessment technique in clinical practice than in research (Carlson, 1990). These interviews are useful to define treatment goals and to observe family interactions and recursive family patterns. However, interviews utilized for the purpose of research are typically completed separately with the child and parent and primarily assess for a number of psychosocial stressors. Semi-structured interviews have been developed by researchers to assess stress in multiple interpersonal

domains, including family and peers. Examples of these interviews include the Psychosocial Schedule for School-Aged Children (PSS; Lukens et al., 1983), as well as interviews developed by Hammen and colleagues to assess life stress in several domains. These domains include close friendships, family relationships, academic performance, school behavior, romantic relationships, and social life (e.g., Brennan et al., 2002; Hammen & Brennan, 2001; Nelson et al., 2003). The above interviews have been found to be reliable and valid measures of the respective psychosocial domains, including family relationships.

Observation is a more objective assessment tool than self-report and interview. However, in order for observational methods to be considered a reliable and valid measure of family functioning, extensive training is required of the observer (Carlson, 1990, Margolin et al., 1998). Furthermore, while observations seem to be more useful in measuring contextual factors related to changes in behavior, self-report may be more useful to measure family members' general impressions of the presence and intensity of certain behaviors, such as conflict, across different situations (Margolin et al., 1998; Schumm, 2001). Observational techniques are more useful in the assessment of coercive family environments with children demonstrating conduct disorder and aggressive behavior than for families with a depressed child (Carlson, 1990; Donenberg & Weisz, 1997; Pavlidis & McCauley, 2001). It is possible that families of depressed children or parents are characterized by less overt behaviors that are therefore more difficult to detect via observations.

For the purposes of this study, a self-report questionnaire will be utilized to assess the family environment. Although both semi-structured interviews (e.g. Brennan et al. 2002, Hammen & Brennan, 2001; Nelson et al., 2003) and observational techniques (Carlson, 1990; Margolin et al., 1998) have been found to be useful tools in measuring

family environments, self-report questionnaires offer a far more efficient means. Overall, self-report questionnaires are a relatively accurate method by which to assess the family context. A multitude of measures have been created for this task; however, the majority of these are only appropriate for use with adults or adolescents and are generally driven by specific theories of family functioning (Schumm, 2001). For instance, the Family Environment Scale (FES, Moos & Moos, 1981) measures the family's social climate, the Family Assessment Measure (FAM, Skinner, Steinhauer, & Santa Barbara, 1983) measures a process model of family functioning, and the Family Adaptability and Cohesion Scales III (FACES III; Olson, Portner, & Lavee, 1985) measures the family as a system that varies across the dimensions of adaptability and cohesion. Although these instruments are created from unique theories and conceptualizations of family functioning, they also share common dimensions. Specifically, each instrument possesses scales for cohesion, control, and communication. In an attempt to integrate these diverse theories and create an all-encompassing measure of family functioning, Bloom (1986) created the Self-Report Measure of Family Functioning. Bloom's instrument integrates items from the FES, FACES III, FAM, and Family-Concept Q Sort (FCQS; Van Der Veen, 1965), resulting in a measure with three dimensions (relationship, value, and system maintenance) along with several subscales.

In order to accurately assess youths' perspectives of their family environment, a researcher must find a psychometrically sound instrument appropriate for younger children that assesses a variety of family functioning domains. To accomplish this, the Self-Report Measure of Family Functioning was adapted and revised by Stark and colleagues (1990) for use with children and adolescents. Overall, the Self-Report

Measure of Family Functioning – Child Revision (SRMFF-CR) offers a reliable method of assessing youths' perspectives of the dimensions of family functioning common across family theories (Stark et al., 1990). The SRMFF-CR consists of six subscales: Communication, Conflict, Social/Recreational Orientation, Cohesion, Laissez-Faire Style, and Authoritarian Style. In a pilot study evaluating the psychometric properties of the SRMFF-CR (unpublished data), the following internal consistency reliabilities (coefficient alphas) were found for the subscales: Communication = .92, Conflict=.84, Social/Recreational Orientation=.85, Cohesion=.91, Laissez-Faire Style=.69, Authoritarian Style=.74. This child-appropriate instrument will be utilized to assess the family environment in the present investigation.

*Family Influences: Parental Psychopathology*

There is strong evidence to support a link between genetic vulnerability and depressive disorders during childhood (Clarkin, Hass, & Glick, 1988). The majority of evidence concerning genetic influences on depression come from studies of adult probands, which show clear evidence that depression runs in families (for a review, see Sullivan, Neale, & Kendler, 2000). However, the designs of these studies cannot rule out the influence of adverse psychosocial factors – such as dysfunctional parent-child relationships, stressful life events, and family conflict – which are common in families with depressed parents (Goodman & Gotlib, 1999). Indeed, researchers acknowledge that the link between parental psychopathology and childhood depression is more than a strictly genetic link (Cummings & Davies, 1994).

Parental depression has been found to predict adjustment problems and depression in offspring (Jacob & Johnson, 2001), as children of depressed parents are more likely to

display considerable maladjustment, as well as recurrent depression (Gordon, Burge, Hammen, Adrian, Jaenicke, Hiroto, 1989; Hammen & Brennan, 2001; Hammen, Burge, Burney, & Adrian, 1990; Warner, Weissman, Fendrich, Wickramaratne, Moreau, 1992; Weissman, Warner, Wickramaratne, Moreau, & Olfson, 1997). Children of depressed mothers or depressed fathers have shown increased emotional/behavioral problems, academic problems, social problems, and physical problems (Billings & Moss, 1983; 1985; Orvaschel et al., 1988). Having a parent with major depression is one of the strongest predictive factors in childhood or adolescent depression (for a review, see Beardslee, Versage, & Gladstone, 1998). Indeed, Hammen (2000) suggested that as many as 45% of children of depressed parents will develop major depression by adolescence, a rate that is far higher than the general population.

Research also highlights some gender differences in the transmission of depressive disorders across generations. Depressed children are more likely to have a mother diagnosed with a depressive disorder than are non-depressed youths; however, they are not more likely to have a depressed father (Cole & Rehm, 1986; Kaslow et al., 1988; Weller et al., 1994). This finding may be due in part to a far greater prevalence rate of depression in adult women than adult men. Other studies indicate that children of both depressed fathers and depressed mothers are at an increased risk for encountering a variety of psychological and psychosocial disturbances, including depression (Atkinson & Rickel, 1984; Beardslee et al., 1987; Billings & Moos, 1983; 1985; Klein et al., 1988; Orvaschel et al., 1988). Therefore, the presence of a depressed father may not be as common as a depressed mother, but the psychosocial ramifications can be equally as powerful.

*Summary of Family Influences on Depression*

The research reviewed in this section clearly highlights the importance of considering early relationships with caregivers, as well as other factors of family environment, when studying the onset and maintenance of childhood depression. Families of depressed children have been found to have less cohesion, communication, and social recreational activities than families of non-depressed children (Barerra & Garrison-Jones, 1992; Cole & McPherson, 1993; Jewell & Stark, 2003; Kaslow et al., 1988; Ostrander & Weinfurt, 2998; Stark et al., 1990). Moreover, these families are characterized by less support (Armsden et al., 1990; Hops et al., 1990; McFarlane et al., 1994; Sheeber & Sorensen, 1998) and more critical and controlling interactions (Avison & McAlpine, 1992; Hops et al., 1990; McFarlane et al., 1994).

Research has also shown that depression tends to run in families. However, it is difficult to completely separate the genetic transmission of depression across generations from the psychosocial factors that are common to families with a depressed parent (Goodman & Gotlib, 1999). Regardless, the literature clearly indicates that children of depressed parents are far more likely than children in the general population to experience a host of adverse psychosocial outcomes (Billings & Moos, 1983), including depression (Hammen, 2000).

Indeed, the family is a particularly useful place to look for a pathway to depression. Children's interactions with their family can serve as either a vulnerability or protective factor in regard to the development of depressive symptoms, particularly for young girls (Compton et al., 2003). Additional research is needed to explore more specific pathways between family environment and depression for female youths.

*Cognitive Diathesis-Stress Theories of Depression*

Theorists have placed increasing emphasis on a variety of negative cognitions that accompany, or lead to, depression (Abramson et al., 1989; Abramson, Seligman, & Teasedale, 1986; Baumeister, 1990; Beck, 1975; Hammen & Goodman-Brown, 1990, Higgins, 1987, 1989; Kaslow, Rehm, & Siegel, 1984; Kovacs & Beck, 1977, 1978, 1986; McCauley et al., 1988; Nolen-Hoeksema, Girgus, & Seligman, 1986; Pyszczynski & Greenberg, 1987; Seligman, 1975; Seligman & Peterson, 1986). The subjective meaning or interpretation that people give to their experiences influence whether or not they will become depressed and whether they will be vulnerable to recurrent, severe or long-lasting episodes of depression (Alloy et al., 1999). Two prominent cognitive theories of depression presently exist: Beck's Theory (Beck, 1967, 1987) and the Hopelessness Theory (Abramson, Metalsky, & Alloy, 1989; Alloy, Abramson, Metalsky, & Hartlage, 1988). Both of these models are vulnerability-stress theories and stress-diathesis models that attempt to explain individual variability in response to stress in terms of maladaptive cognitive patterns (Alloy et al. 1999). Moreover, both theories postulate that particular negative cognitive styles increase the likelihood of an individual developing depression when encountering negative life events (Alloy et al., 1999). In many respects, these theories are extremely similar in that they both present cognitive vulnerability hypotheses regarding the etiology of depression. The proposed study will define cognitive vulnerability to depression via Beck's model in order to test hypotheses within one theoretical model.

*Beck's Theory of Depression*

Beck's cognitive diathesis-stress theory of depression (Beck, 1963, 1967, 1972, 1983, 1987; Kovacs & Beck, 1978) has generated a vast body of empirical research. Beck's theory of depression emphasizes cognitive structures as the critical elements in the development, maintenance, and recurrence of depression (Beck, 1967, 1983; Kovacs & Beck, 1978). The construct of schemas is central to the theory. Based out of the information processing model, schemas are defined as stored bodies of knowledge that interact with incoming information to influence selective attention and memory search (Segal, 1988; Williams, Watts, MacLeod, & Mathews, 1997). Schemas are hypothesized to develop from interactions with the environment, primarily during childhood (Beck, 1967/1972, 1987; Kovacs & Beck, 1978). Therefore, if an individual encounters many negative experiences early in life, schemas may develop that guide attention toward negative rather than positive events and lead to the enhanced recall of negative experiences (Scher, Segal, & Ingram, 2004). Such preferential processing reinforces the knowledge contained in schemas, ultimately leading to stable and negative views of the world (Markus, 1977). These depressogenic schemas provide access to a complex system of negative themes and cognitions that contribute to a pattern of negative self-referent information processing characterized by systematic errors in thinking (Beck, 1967, 1972, 1987; Kovacs & Beck, 1978).

Every person possesses schemas that develop from life experiences and guide information processing. But the schemas of depression-prone individuals are considered dysfunctional, in that they contain views about the self, the world, and the future that are both rigid and unrealistically negative (Beck, 1967/1972, 1987; Kovacs & Beck, 1978).

Individuals with depressogenic schemas demonstrate cognitive distortions by misinterpreting neutral stimuli as negative or catastrophizing the consequences and implications of a negative life event. Therefore, Beck's theory (Beck, 1963, 1987) proposes that depression is intimately associated with negative thinking about the self, the world, and the future. Numerous studies support the contention that depressed patients are more likely than nondistressed people (e.g. Dobson & Shaw; 1986) or patients with other diagnoses (e.g., Watkins & Rush, 1983) to draw strong negative conclusions going beyond the information given in negative scenarios (for a review, see Haaga, Dyck, & Ernst, 1991). Such studies have assessed cognitive bias with questionnaires (e.g., Smith, O'Keeffe, & Christensen, 1994), sentence completion tests (Watkins & Rush, 1983), or by asking clients to articulate their thoughts in response to simulated situations presented in the laboratory (White, Davison, Haaga, & White, 1992).

However, the mere presence of a negative self-schema is insufficient for the development of depression. Another major tenet of Beck's theory is that schemas lie dormant until activated by relevant stimuli (Beck, 1967,1972, 1987; Kovacs & Beck, 1978; Segal & Ingram, 1994). Beck contended that stress, such as catastrophic occurrences or daily taxing events, are generally the types of experiences that activate schemas (Beck, 1967,1972, 1987; Kovacs & Beck, 1978). Thus, Beck's theory includes a causal mediation component (Abramson et al., 1988; Alloy et al., 1988). Depression-prone individuals possess latent dysfunctional schema characterized by negative content that are activated when that individual encounters stress. When activated, these dysfunctional schemas give rise to negative cognitions and corresponding patterns of information processing that serve to precipitate depression (Beck, 1967,1972, 1987;

Kovacs & Beck, 1978; Eaves & Rush, 1984; Rush & Beck, 1978, Scher, Segal, & Ingram, 2004).

Essentially, Beck's theory contends that people who possess negative self-schemas typically revolving around themes of inadequacy, failure, loss, and worthlessness consequently possess a cognitive vulnerability to depression (Beck, 1967/1972, 1987; Kovacs & Beck, 1978). In other words, individuals who interpret or explain events through this negative lens are more likely to experience depression when encountering stress in their lives. Complimentary to research emphasizing biological or genetic risks for depression, Beck's theory helps answer the question of why some people are more prone to depression than others. The following section will review some of the literature that corroborates Beck's theory of cognitive vulnerability to depression.

*Empirical Support of Beck's Theory of Depression*

Substantial evidence supports Beck's cognitive vulnerability theory to depression. Indeed, depressogenic cognitions and/or automatic thoughts are associated with an increase in depressive symptoms in a host of studies (e.g. Abela & DAllesandro, 2002; Hankin, Abramson, Miler, & Haeffel, 2004; Joiner, Metalsky, Lew, & Klocek, 1999; Kendall, Stark, & Adam, 1990; McDermut, Haaga, & Bilck, 1997; Stark, Schmidt, & Joiner, 1996). Depressogenic cognitions have been found to be related to depressive symptoms in populations of adults (e.g. Beck, Brown, Steer, Eidelson, Riskind, 1987; Jolly, Dyck, Kramer, & Wherry, 1994), college students (e.g. Bruck, Mattia, Heinberg, & Holt, 1993; McDermut & Haaga, 1994), adolescents (e.g. Garber, Weiss, & Shanley, 1993; Jolly, 1993), and children (e.g. Epkins, 1996; Kendall et al., 1990; Stark et al., 1996).

A powerful strategy for testing the cognitive vulnerability hypothesis is the "behavioral high-risk design" (e.g. Depue et al., 1981). Akin to the genetic high-risk paradigm, the behavioral high-risk design involves the study of individuals who are not currently depressed, but who are hypothesized to be at high or low-risk for developing depression (Alloy et al., 1999). Therefore, to test the cognitive vulnerability hypothesis of depression, researchers select non-depressed people who are at high versus low risk for depression based on the presence versus absence of the hypothesized depressogenic cognitions. They then compare these groups on their likelihood of exhibiting depression either in the past (retrospective design) or the future (prospective design).

The ongoing Temple-Wisconsin Cognitive Vulnerability to Depression (CVD) Project uses a behavioral high-risk design to test the cognitive vulnerability hypotheses of depression. In the CVD project, first-year college students with no current Axis I disorders, who were either at high or low-risk for depression (based on the presence or absence of cognitive styles that represent a vulnerability to depression as theorized in the hopelessness theory and Beck's theory of depression), were analyzed retrospectively and followed prospectively for five years. Retrospective results from the CVD Project found that high-risk participants showed double the rate of lifetime major depression than low-risk participants (Alloy et al., 2000). Moreover, the differences between high-risk and low-risk participants were specific to depressive disorders, meaning that the groups did not differ on lifetime prevalence rates of other Axis I disorders (Alloy et al., 2000). Overall, these findings suggest that depressogenic cognitions confer risk for full-blown, clinically significant depressive disorders over the course of a lifetime.

Initial prospective findings from the CVD Project were perhaps even more powerful in their support of the cognitive vulnerability hypothesis. Cognitively high-risk participants were significantly more likely than cognitively low-risk participants to develop first onsets and recurrences of episodes of DSM III-R (American Psychiatric Association, 1987) and Research Diagnostic Criteria (RDC; Spitzer, Endicott, & Robins, 1978) depressive disorders during the first two-and-a half years of follow-up (Alloy, Abramson, & Hogan, 2000). Specifically, Abramson and colleagues (1999) found that high-risk participants showed a greater likelihood than low-risk participants of a first onset of both major depressive disorder (17% vs. 1%) and minor depressive disorder (39% vs. 6%). In order to control for any residual depressive symptoms associated with high-risk status, Abramson et al (1999) used initial depressive symptom scores, assessed with the BDI (Beck, Ward, Mendelon, Mock, & Erbaugh, 1961), as a covariate. Even when controlling for the initial BDI scores (Beck et al., 1961), the differences between risk groups were maintained (Abramson et al., 1999). In contrast, there were no risk differences in the development of anxiety disorders during the prospective follow-up period (Abramson et al., 1999). Indeed, these findings suggest that depressogenic cognitions confer specific risk for first onsets of depression.

Further findings from the CVD Project illustrated that high-risk participants with a past history of depression were more likely than low-risk participants with prior depression to develop recurrences of DSM-III-R and RDC major depression (27% vs. 6%) and RDC minor depression (50% vs. 26.5%) (Abramson et al., 1999). These differences were again maintained even when controlling for initial BDI scores (Abramson et al., 1999). Therefore, the cognitive vulnerability hypothesis was also

upheld for recurrences of depressive disorders. This is a particularly important finding given that depression is often a recurrent disorder (Belsher & Costello, 1988; Judd, 1997). Another finding of the CVD Project illustrated that high-risk participants were also more likely to have exhibited suicidality than low-risk participants (Abramson et al., 1998). Suicidality was measured both by structured diagnostic interviews and a self-report questionnaire at the two-and-a-half year follow-up (Abramson et al., 1998).

*Assessment of Depressogenic Cognitions*

As previously reviewed, Beck's theory of depression explicitly posits that depressed individuals possess distorted negative perceptions of themselves, their world, and their future. For the purposes of research, self-report questionnaires have existed as the primary means by which to assess this cognitive triad. Some of the relevant instruments and issues in the practice of assessing these cognitions and beliefs will be reviewed below.

Automatic thoughts, or the "stream of consciousness" self-statements made by depressed individuals, are believed to play a role in the onset (Abramson et al., 1989) and maintenance (Beck et al., 1979) of depression. The Automatic Thoughts Questionnaire-Negative (ATQ-N; Hollon & Kendall, 1980) is a self-report instrument designed to measure the frequency of negative self-statements described in Beck's (1967; 1976) theory of depression. Items such as "I'm no good," "Why can't I ever succeed," and "I've let people down," represent some of the negative thoughts about the self that Beck (1967; 1979) describes as part of the cognitive triad. The ATQ-N has demonstrated excellent psychometric properties, specificity to depression, and sensitivity to changes in mood state (Dobson & Breiter, 1983; Hill, Oei, & Hill, 1989; Hollon & Kendall, 1980).

There are also multiple "in-session" techniques employed by therapists to assess the automatic thoughts of their clients. These idiographic methods can include the simple counting of negative thoughts, keeping a thought journal, etc. However, these techniques assume that clients have access to their automatic thoughts and can reliably report them. Overall, the assessment of automatic thoughts provides insight into the underlying schemas and beliefs that shape the way an individual experiences daily interactions.

However, in order to more fully understand the diathesis of a depressed individual, instruments are needed that explore the overriding attitudes and beliefs that individuals possess. The Dysfunctional Attitude Scale (DAS; Weissman & Beck, 1978) is a questionnaire designed to tap into a depressed person's unrealistic, distorted and illogical beliefs about the self, world, and future. Although Weissman and Beck (1978) report excellent internal consistencies across several samples for the DAS, two distinct criticisms of the DAS have been raised. First, Hollon, Kendall, & Lumry (1986) reported that DAS scores were elevated in non-depressed psychiatric populations (such as schizophrenic patients and those with bipolar illness), suggesting that these cognitions are not specific to unipolar depression. Second, many studies have found that DAS scores of remitted depressed subjects were not different from a nonpsychiatric control group, which suggests that dysfunctional attitudes are mood-state dependent rather than a stable mode of perceiving the world. Alloy, Albright, Fresco, and Whitehouse (1995) and Persons and Miranda (1992) have offered two distinct explanations that account for these findings. Alloy et al. (1992) point out that many of the studies showing instability of cognitive style scores used psychiatric samples that received treatment or employed a cross-sectional design, thereby making it difficult to determine direction of causality.

Alternatively, Persons and Miranda (1992) proposed the mood-state hypothesis to account for them. The mood-state hypothesis states that the beliefs are stable in vulnerable individuals, but they are accessible only during negative mood states.

Other instruments that assess these cognitive constructs include the Hopelessness Scale (Beck, Weissman, Lester & Traxler, 1974) for measuring views of the future and the Rosenberg Self-Esteem Scale (Rosenberg, 1965) for measuring views of the self. The Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) has items that assess the three domains of the cognitive triad, but fails to do so in a systematic manner. The Cognitive Triad Inventory (CTI; Beckham, Leber, Watkins, Boyer, & Cook, 1986) was specifically created measure the three distinct domains of the cognitive triad in adults. Similarly, Kaslow and colleagues (1992) created a modified version of the CTI for the purpose of assessing the cognitive triad of children (CTI-C; Kaslow, Stark, Printz, Livingston, & Tsai, 1992). These 36-item questionnaires are both psychometrically validated measures that can be completed in a relatively short amount of time (Beckham et al., 1986; Kaslow et al., 1992). Accordingly, the present investigation will utilize the CTI and the CTI-C to assess depressogenic cognitions.

*Summary of Cognitive Diathesis-Stress Theories of Depression*

Cognitive diathesis-stress models of depression are theories that attempt to explain variability in response to stress. Specifically, the theories focus on the cognitions that lead some people to become depressed when experiencing life stressors while others are able to escape the experiences symptom-free. Beck's theory focuses on the schemas of individuals, postulating that people who possess depressogenic cognitions are at increased vulnerability to depression when faced with negative life events. In this theory,

depressogenic cognitions are often defined as distorted negative perceptions of the self, world, and future (cognitive triad).

Numerous studies have supported Beck's theory regarding cognitive vulnerability to depression. Individuals possessing dysfunctional attitudes, negatively distorted information processing, and/or a negative cognitive triad have been shown to experience more depressive symptoms on average. Moreover, these high-risk individuals are also at a greater risk for experiencing a first onset and recurrence of a depressive disorder in the future. These results from behavioral high-risk studies provide especially important support for the cognitive vulnerability hypothesis because they are based on a truly prospective test, uncontaminated by prior history of depression. Indeed, cognitive vulnerability is an important risk factor and theoretical pathway to the onset of depressive disorders.

### *Developmental Origins of Cognitive Vulnerability to Depression*

If depressogenic cognitions confer vulnerability for depression, as indicated by the literature previously reviewed, then it is important to understand the antecedents and origins of these depressogenic cognitions. Studies have demonstrated the likelihood that genetic, neurochemical, social learning, and early traumatic processes all contribute to the development of cognitive vulnerability to depression (Garber & Flynn, 1998; Gibb et al., 2001; Goodman & Gotlib, 1999; Haines, Metalsky, Cardamone, & Joiner, 1999; Rose & Abramson, 1992). And according to Beck's theory of depression, schemas that structure one's understanding of the world are primarily formed through early learning experiences - especially those that occur in the family (Beck, 1967; Beck et al., 1979). Therefore, the family environment is a particularly important context to consider when studying the

development of cognitive constructs in youths. The following section will review the literature regarding the developmental origins of cognitive vulnerability to depression, specifically as it relates to the influence of the family.

*Negative Life Events*

Negative cognitive schemas associated with depression are hypothesized to develop in response to stressful events in childhood (Beck, 1967). Once such events have become cognitively encoded, schemas sensitize individuals to respond in a dysfunctional fashion to circumstances that resemble those experienced in childhood (Beck, 1967). In this manner, individuals become sensitized to certain types of life situations and tend to project negative assumptions to many neutral or vague situations (Beck, 1967). Thus, Beck's theory pinpoints the nexus of cognitive vulnerability in childhood experiences. The following sections will review some of the childhood experiences and parental characteristics that have been shown to correlate with cognitive vulnerability in offspring.

*Family Environment*

The parent-child relationship is likely an important context in which cognitive vulnerabilities to depression develop. If the relationship between parent and child is conflictual or distant, that dynamic may foster many negative childhood experiences. Consistent with this perspective, Rose and Abramson (1992) found that adults who exhibited marked cognitive vulnerability for depression reported growing up in environments characterized by emotional, sexual, and physical maltreatment as well as neglect. According to Rose and Abramson (1992), emotional maltreatment is a particularly powerful contributor to cognitive vulnerability to depression because the abuser, by definition, supplies negative cognitions to the victim. Overall, individuals

who rate their parents as being more abusive and neglectful report a greater degree of depression; however, the statistical relationship between abuse and depression is mediated by dysfunctional cognitive styles in offspring (McGinn, Cukor, & Sanderson, 2005).

Multiple studies have also demonstrated that negative cognitions about one's self, such as beliefs of self-worthlessness, are associated with negative perceptions of parent–child relationships (Blatt, Wein, Chevron, & Quinlan, 1979; Ingram, Overbey, & Fortier, 2001; McCranie & Bass, 1984; Randolph & Dykman, 1998; Whisman & Kwon, 1992). For example, Whisman and Kwon (1992) found that perceptions of low parental care are associated with dysfunctional attitudes and depressogenic cognitive styles (i.e., attributing negative events to internal, stable, and global causes). Likewise, other studies have found that reports of parental perfectionism and criticism are associated with higher levels of dysfunctional attitudes (Gamble & Roberts, 2005; Randolph & Dykman, 1998), and adverse parenting is associated with low self-esteem (Gamble & Roberts, 2005; Garber, Robinson, & Valentiner, 1997). Furthermore, Gamble and Roberts (2005) found that adverse parenting tends to have a particularly negative effect on the cognitive style of girls, as compared to boys.

Because most of the research in this field has relied on self-report measures of parenting, Jaenicke et al. (1987) tested the hypothesis utilizing behavioral measures of maternal criticism recorded during videotaped interaction tasks. Results indicated that maternal criticism was significantly associated with the child participant's tendencies to make internal (self-blaming) attributions for negative life events (Jaenicke et al., 1987). Indeed, parents who impose rigid or perfectionistic standards on their children may be

inadvertently influencing their children to adopt these standards for themselves, resulting in the formation of dysfunctional attitudes in the child (Randolph & Dykman, 1998). Together, this body of research suggests that children internalize their parents' harsh perfectionistic standards and critical demeaning comments through the development of complementary maladaptive beliefs.

However, a common limitation of a number of the studies discussed above is that the associations between reports of adverse parenting and negative cognitive style could have been driven by current affective distress. In other words, emotional distress could have led to negative biases in the recall of parenting behaviors and to the subsequent endorsement of more negative statements on measures of cognitions. To address this issue, Ingram et al. (2001) tested the associations between parenting and cognitions after statistically controlling for affective symptomology. Even with this stringent control, Ingram and colleagues (2001) found that maternal care was a significant predictor of both positive and negative cognitions. Furthermore, individuals who reported positive maternal bonding experiences also reported more positive and less negative automatic thoughts than those who reported poor maternal bonding. Likewise, Brewin, Firth-Cozens, Furnham, and McManus (1992) found that higher levels of self-criticism in adulthood were related to retrospective reports of poor parent–child relationships, particularly with mothers, even after controlling for mood-state and social desirability.

Clearly, the relationship between parents and children is an important context to consider when exploring the origins of cognitive vulnerability to depression. In all, these findings contribute to the growing literature supporting the role of cognitions in mediating the link between negative parenting and depression (McGinn, Cukor, &

Sanderson, 2005). In other words, negative parenting practices are associated with an increase in cognitive vulnerability in offspring which in turn is associated with higher incidence of depression.

*Parental Psychopathology*

As previously addressed, children of depressed parents are at increased risk for developing depression themselves. However, contemporary theorists have hypothesized that depressogenic cognitions mediate the relationship between parental depression and depression in offspring. This contention has been supported by the finding that parental depression is associated with negative cognition in offspring (e.g. Garber & Flynn, 2001). In this manner, children of depressed mothers have lower self-esteem and a more depressogenic attributional style than those of controls (Jaenicke et al., 1987). Mothers' depressive ratings also significantly correlate with their children's self-evaluation scores and cognitive distortion scores (Kendall, Stark, & Adam, 1990). A similar relationship between paternal depression and offspring's negative cognitions has not been established within the literature. However, when present, paternal depression is still an important factor to consider when conceptualizing the development of depressive disorders in offspring.

Abramson, Alloy, Tashman, Whitehouse, and Hogan (1998) further tested the relationship between parental depression and cognitive vulnerability in offspring via the CVD Project. Specifically, the study examined the association between CVD Project participants' cognitive risk status and their parents' depression. Parent depression rates were based on the participant's reports of their parents' psychiatric history as well as a direct interview of the parents. Based on the child's report of parental psychopathology,

Abramson and colleagues (1998) found that cognitively high-risk participants' mothers were significantly more likely to have a history of depression than were low-risk participants' mothers (35% vs. 18%). Similarly, high-risk fathers showed a trend to be more likely to have a history of depression as well (18% vs. 12%) (Abramson et al., 1998). However, no discrepancies between high-risk versus low-risk participants were present in the rates of other parental psychological disorders. Using the direct interview of parents, mothers of high-risk participants were found to have a greater lifetime history of depression than mothers of low-risk participants, whereas fathers of high-risk and low--risk participants did not differ (Abramson et al., 1999). In sum, both child and parent reports about parents' depression were consistent in showing greater lifetime depression in the mothers of high-risk individuals. These findings are consistent with the hypothesis that parental depression, and particularly mother's depression, contributes to the development of cognitive vulnerability to depression in their offspring.

Another possibility is that the relationship between parental depression and cognitive vulnerability in offspring is in fact mediated by the cognitive styles of the parents. In other words, perhaps children of depressed parents are learning their cognitive styles from observing the cognitive styles of their parents. This hypothesis seems particularly plausible when considering the literature highlighting the tendency of depressed parents to also possess depressogenic cognitions. For example, White and Barrowclough (1998) found that depressed mothers more often viewed their child's behavior to have a stable cause. Cornah, Sonuga-Barke, Stevenson, and Thompson (2003) found that mothers with mental health problems make more internal and global attributions for negative behaviors than other mothers. Mothers with mental health

problems also tend to see the cause of their child's negative behavior as one which affects many situations in their child's life (Cornah et al., 2003). There are two hypotheses in the literature that explore how parents' cognitive styles correlate with and/or influence the cognitions of their offspring: the modeling hypothesis and the inferential feedback hypothesis. The literature on these two hypotheses is reviewed below.

*Modeling*

The modeling hypothesis asserts that children may learn their cognitive schemas and styles by observing and modeling their parents' cognitive schemas and styles (Abramson et al., 1999; Alloy et al., 1999; Garber & Flynn, 1998; Haines et al., 1999). If this is true, then it would stand to reason that children's cognitive style should correlate with those of their mothers and/or fathers. Many of the studies that have explored this hypothesis have done so through the lens of the hopelessness theory of depression. Therefore, the results of studies examining the modeling hypothesis have predominantly shown a correlation between parents' and children's attributional styles (Alloy et al., 2001) rather than their cognitive triad.

Seligman et al. (1984) reported that children's cognitive styles for negative events converged with those of their mothers ($r = .39$, $p < .01$). Mothers' composite styles for negative events correlated with her children's depressive symptoms as well ($r = .42$, $p < .001$) (Seligman et al., 1984). Seligman and Peterson conducted a similar study in 1986 that replicated these findings and once again demonstrated a significant relationship between mothers' attributional styles for negative events and those of their 8-13 year-old children (Seligman & Peterson, 1986). Using a sample of 240 sixth-grade children and their mothers, Garber and Flynn (2001) found a significant association ($r=.25$) between

mothers' and children's global self-worth, but no correlation between their general attributional styles. Alloy et al. (2001) tested the modeling hypothesis of cognitive vulnerability within the CVD data set. Consistent with the modeling hypothesis, mothers of high-risk students demonstrated more negative inferential styles and dysfunctional attitudes than did mothers of low-risk students (Alloy et al., 2001). These group differences were significant even when the mothers' levels of depression were controlled (Alloy et al., 2001). Stark et al. (1996) also found a relationship between the scores of mothers and children on a measure of Beck's negative cognitive triad.

Only a few studies have failed to find an association between parents' and children's attributional styles (Kaslow et al., 1988; Turk & Bry, 1992), and these studies have been criticized for small sample sizes (Alloy et al., 2001). Overall, the relationship between mothers' and children's cognitive styles has been established in the literature. However, most studies examining the modeling hypothesis have failed to find a significant relationship between fathers' and children's cognitive styles for negative events (Alloy et al., 2001; Kaslow et al., 1988; Oliver & Berger, 1992; Seligman et al., 1984; Stark et al., 1996; Turk & Bry, 1992). Thus, to the extent that modeling of parents' cognitive style is a contributor to the development of cognitive vulnerability to depression in offspring, it is hypothesized that the mother's cognitive style is modeled more than the father's cognitive style (Alloy et al., 2001).

*Parental Inferential Feedback*

In addition to modeling, the feedback that parents provide their children about causes and consequences of negative events in the child's life has also been shown to contribute to the child's cognitive risk for depression. Children may be taught, implicitly

or explicitly, to make the same inferences about events in their lives as those expressed by their parents. If parental feedback contributes to children's cognitive vulnerability to depression, then parents' inferential communications to their children should correlate with the children's cognitive styles and schemas.

Overall, research has supported this hypothesis. Jaenicke et al. (1987) found a significant relationship between mothers' verbal criticism of their children and their children's tendency to make self-blaming attributions for negative events. Similarly, mothers' negatively toned comments have been shown to contribute to children's development of negative self-schema (Jacquez, Cole, & Searle, 2004; Radke-Yarrow, Belmont, Nottelmann, & Bottomly, 1990). Perceived parental messages about the self, world, and future were also found to be predictive of children's cognitive triad, as well as ratings of depression (Stark et al., 1996). The same study also found that the relationship between perceived parental messages and depression is completely mediated by children's cognitive triads (Stark et al., 1996).

The feedback hypothesis was also tested in the CVD Project using parent and child reports on a questionnaire assessing parents' typical feedback to their child regarding the causes and consequences of negative events in the child's life (Alloy et al., 1998). Results from the questionnaire supported the feedback hypothesis. Child reports of their parents' behavior indicated that both mothers and fathers of high-risk participants provided more depressogenic feedback about causes and consequences of negative life events that happened to their child than did mothers and fathers of low-risk participants (Alloy et al., 1998).

The literature also seems to suggest that the impact of fathers' cognitions upon their children's cognitive style is more influential through the medium of inferential feedback than through modeling. Studies have demonstrated that children's perceptions of their father's inferential feedback is a significant predictor of child inferential style, even more so than mothers' (Alloy et al., 2001; Fincham & Cain, 1986; Garber & Flynn, 2001; Turk & Bry, 1992). Conceptualizing cognitive vulnerability through Beck's theory, Stark and colleagues (1996) found that messages from the father about the self, world, and future predicted the cognitive styles and severity of depressive symptoms of girls and accounted for a greater percentage of variance in the cognitive triads of girls than did messages from mothers.

Thus, research has demonstrated the importance of both parents' inferential feedback in the development of cognitive risk for depression in offspring. However, the relationship appears to be more robust in regard to fathers' messages. In other words, parents, especially fathers, communicate their own inferences about the causes and consequences of negative events in their child's life in such a manner that the child develops an inferential style consistent with that feedback (Alloy et al., 2001).

*Summary of Developmental Origins of Cognitive Vulnerability to Depression*

Understanding the factors that lead to cognitive vulnerability to depression in children and adolescents could be extremely important in the treatment and prevention of depressive disorders. Theorists agree that the negative schemas or cognitive styles that constitute an increased vulnerability to depression are primarily learned via childhood experiences. Moreover, it appears as though parents play a significant role in the development of these cognitions, particularly in the case of young girls. The literature

presents multiple pathways through which parents may influence their offspring's cognitive styles.

One of those avenues appears to be the overall family environment. Children who are raised in households characterized as low in warmth (Whisman & Kwon, 1992) and/or high in criticism (Gamble & Roberts, 2005; Randolph & Dykman, 1998) tend to develop more depressogenic cognitive styles than other children. Therefore, parents who impose rigid or perfectionistic standards on their children may influence their children to adopt those same standards in themselves, resulting in the formulation of dysfunctional attitudes (Gamble & Roberts, 2005; Garber et al., 1997). Clearly, family relationships and the overall family context is a vital factor in the cognitive development of children.

Another hypothesized pathway is the presence of a depressed parent. Research has shown that cognitively vulnerable individuals are more likely to have a depressed mother than people without depressogenic schemas (e.g. Garber & Flynn, 2001). Mother's depressive symptoms have also been shown to be correlated with cognitive vulnerability in their offspring (Jaenicke et al., 1987; Kendall, Stark, & Adam, 1990). This relationship between parental depression and cognitive vulnerability in offspring has not been found with regards to depression in fathers. However, as discussed earlier, the presence of a depressed father in the home is associated with many negative psychosocial outcomes in children. Indeed, parental depression is an important factor to consider in the development of depressogenic cognitions in children.

The third avenue reviewed was the modeling hypothesis. This hypothesis contends that offspring learn their cognitive style by modeling the cognitive styles of their parents. Most studies testing this theory have found a correlation between a

mother's cognitive styles and those of her children (Alloy et al, 2001; Garber & Flynn, 2001; Seligman et al., 1984; Seligman & Peterson, 1986; Stark et al., 1996). However, a similar relationship between the cognitive styles of fathers and the cognitive styles of their children has not been found as often. Overall, the literature corroborates the modeling hypothesis as a legitimate possible pathway to the development of depressogenic cognitions in children.

The parental inferential feedback hypothesis was the final pathway explored. In this theory, children learn their cognitive styles from the feedback that parents provide them about the causes and consequences of negative events in their lives. Overall, research has supported this model, finding a relationship between parents' inferential feedback and children's depressogenic schema (Alloy et al., 1998; Stark et al., 1996). These findings were even more robust in regard to the inferential feedback of fathers. Studies demonstrated that children's perceptions of their father's inferential feedback was a greater predictor of a child's cognitive styles than the inferential feedback provided by mothers (Alloy et al., 2001; Fincham & Cain, 1986; Garber & Flynn, 2001; Stark et al., 1996; Turk & Bry, 1992). Overall, research has supported the hypothesis that parents, and especially fathers, communicate their own inferences about the causes and consequences of negative events in such a manner that the child develops an inferential style consistent with that feedback.

### *Statement of Problem*

Depression has been characterized as the most common mental health malady among adolescents (Lewinsohn et al., 1988). Onset of depression that occurs early in life is associated with many negative psychosocial outcomes later in life, such as criminal

behavior, difficulties in relationships, difficulty in occupational functioning, low life satisfaction, poor health, and in extreme cases, suicide (Gotlib et al., 1998; Kandel & Davies, 1986; Lewinsohn et al., 2003; Rao et al., 1995). The prevalence of this serious disorder tends to dramatically increase over the course of adolescence (Nolen-Hoeksema, 1995; Petersen et al., 1993), and particularly for young females (Hankin et al., 1998; Nolen-Hoekseam, 1990; Peterson et al., 1993). In fact, before adolescence, the prevalence rates across genders are relatively equal, while after puberty, depression is approximately twice as common in females (Hankin et al., 1998; Nolen-Hoekseam, 1990; Peterson et al., 1993). But, why do depression rates increase so dramatically during adolescence? And why is it during this particular time that females develop an increased vulnerability to the disorder? Indeed, the cause of these demographic trends on the landscape of depression during adolescence is a topic in need of continued research.

In previous attempts to answer questions regarding the etiology of depression, research has explored multiple pathways that are associated with the development of depression in children and adolescents (for a review, see Stark et al., 2000). Some of the major theoretical approaches regarding the etiology of depression include biological models (genetics and neurochemistry), cognitive models, behavioral/interpersonal models, family models, and life stress models (Hammen & Rudolph, 2003). The proposed study will attempt to integrate many of these theories into a comprehensive model of depression that is particularly salient for adolescent females.

Many cognitive diathesis-stress models of depression focus on the specific cognitions present in individuals with an increased vulnerability to developing depression (e.g. Abramson et al., 1989; Beck, 1967, 1987). Beck's theory of depression centers

around the schemas of individuals, postulating that people who possess depressogenic cognitions are at increased vulnerability to depression when faced with negative life events (Beck, 1967, 1987). Cognitive theorists postulate that the developmental emergence of these cognitive constructs during adolescence may contribute to the gender shift that occurs at this time. Thus, in order to conceptualize the etiology to depression in youths, it becomes imperative to understand the factors and precursors that ultimately lead to cognitive vulnerability to depression in children and adolescents. Theorists agree that the negative schemas or cognitive styles that constitute an increased vulnerability to depression are primarily learned via childhood experiences. Moreover, it appears as though parental and familial interactions play significant roles in the development of these cognitions in young females (Gamble & Roberts, 2005). This investigation will explore the four most relevant hypotheses associated with the development of cognitive vulnerability in youths.

One of the proposed pathways to the development of cognitive vulnerability is a negative family environment. Children who are raised in households characterized as low in warmth and/or high in criticism tend to develop more depressogenic cognitive styles than children in alternate environments (e.g. Ingram, Overbey, & Fortier, 2001). Another hypothesized avenue is the presence of a depressed parent. This is supported by the findings that illustrate that a mother's depressive symptoms are correlated with cognitive vulnerability in her offspring (e.g. Garber & Flynn, 2001). The third pathway considered is the hypothesis that offspring learn their cognitive style by modeling the cognitive styles of their parents. Most studies testing this theory have found a correlation between a mother's cognitive styles and those of her children (e.g. Alloy et al., 2001).

Lastly, the parental inferential feedback hypothesis is the theory that children learn their cognitive styles from the feedback parents provide them about the causes and consequences of negative events in their lives. Overall, research has supported this model and has found a relationship between parents' inferential feedback and their children's depressogenic schemas (e.g. Stark et al., 1996).

It is the purpose of this study to test a model of depression that combines these distinct risk factors and vulnerabilities to depressogenic cognitions and ultimately depressive symptoms. Overall, this study seeks to further delineate the complex relationship among family functioning, cognitions, and depression in adolescent females.

## *Hypotheses*

### *Hypothesis 1*

Daughter's report of cognitive style will affect her depressive symptom severity. Therefore, higher scores on the total score (combined self, world, and future) of the Cognitive Triad Inventory for Children (CTI-C; Kaslow et al., 1992) will result in higher scores on the composite depressive symptoms scale of The Schedule for Affective Disorders and Schizophrenia for School Age Children (K-SADS-IVR; Ambrosini & Dixon, 2000).

### *Rationale*

Previous research has found that children and adolescents who report depressogenic cognitive styles are more likely to experience depressive symptoms than children and adolescents who typically make more positive assumptions about the self, world, and future (Epkins, 1996; Garber, Weiss, & Shanley, 1993; Jolly, 1993; Kendall et al., 1990; Stark, Schmidt, & Joiner, 1996). Utilizing the behavioral high-risk design, the

CVD Project provides powerful prospective evidence that depressogenic cognitions confer risk for full-blown depressive disorders over the course of a lifetime (Alloy et al., 2000). This hypothesis will confirm previous research and further establish depressogenic cognitive styles as a vulnerability to depressive symptomology.

*Hypothesis 2*

Mother's reports of depressive symptoms will affect both her daughter's cognitive styles and the severity of her depressive symptoms. Therefore, mother's reports of higher scores on the depressive symptom scale of the Symptom Checklist 90 (SCL-90-R; Derogatis, 1983) will correspond with daughter's report of higher scores on the total score of the CTI-C (Kaslow et al., 1992) and higher scores on the composite depressive symptoms scale of K-SADS-IVR (Ambrosini & Dixon, 2000). In this hypothesized model, the relationship between maternal depression and depression in daughters will be partially mediated by the daughter's cognitive style. Therefore, mother's depressive symptoms will have both a direct and indirect effect on their daughter's depressive symptomology. The hypothesized path of the indirect effect is that the mother's depressive symptoms will influence daughter's cognitive styles, which will in turn influence daughter's depressive symptomology.

*Rationale*

Maternal depression has been found to predict depression in offspring (Hammen, Burge, Burney, & Adrian, 1990; Weissman, Warner, Wickramaratne, Moreau, & Olfson, 1997), with as many as 45% of children of depressed parents developing major depression by adolescence (Hammen, 2000). Maternal depression has also been found to be substantially associated with negative cognition in offspring (Abramson et al., 1999;

Garber & Flynn, 2001; Jaenicke et al., 1987; Kendall et al., 1990). Therefore, it is hypothesized that beyond the genetic predisposition toward depression, children of depressed parents also develop depressogenic cognitive styles which places them at a greater risk for developing depressive symptoms. This model will be tested more thoroughly, exploring both the direct and indirect influence of maternal depression on daughter's depression.

*Hypothesis 3*

Daughter's reports of family environment will affect both her cognitive styles and depressive symptom severity. Specifically, higher scores on the Conflict subscale and lower scores on the Communication, Cohesion, and Social Recreational subscales of the Self-Report Measure of Family Functioning-Children Revised (SRMFF-CR; Stark, 2002) will cause a more negative cognitive style (higher total score on the CTI-C; Kaslow et al., 1992) and more depressive symptoms in offspring (higher composite score of depressive symptoms from the K-SADS-IVR; Ambrosini & Dixon, 2000). In the hypothesized model, the relationship between family environment and depressive symptoms in daughters will at least be partially mediated by daughter's cognitive style. Therefore, family environment will have both direct and indirect effects on daughter's depressive symptomology. The proposed indirect effect is that family environment will influence daughter's cognitive styles, which will in turn influence daughter's depressive symptomology.

*Rationale*

This hypothesis is supported by research demonstrating that many depressed children are reared in a disturbed family environment (Stark & Brookman, 1992).

Specifically, family environments of depressed youths have been found to have less cohesion, less communication, fewer social recreational activities (Barrera & Garrison-Jones, 1992; Cole & McPherson, 1993; Jewell & Stark, 2003; Kaslow et al., 1988; Ostrander & Weinfurt, 1998; Stark et al., 1990) and greater conflict (Forehand, Brody, Long, & Fauber, 1988). Other studies have found that children's perceptions of their relationship with parents are associated with the development of cognitive styles (Blatt, Wein, Chevron, & Quinlan, 1979; Ingram, Overbey, & Fortier, 2001; McCranie & Bass, 1984; Randolph & Dykman, 1998; Whisman & Kwon, 1992), particularly in the case of young females (Gamble & Roberts, 2005). However, this research has not specifically addressed the influence of the family variables associated with depression (i.e. conflict, cohesion, communication, and social recreational activities) on the development of depressogenic cognitions in offspring. It is a logical hypothesis that these specific family variables may influence the development of depressogenic cognitions in youths which subsequently places them at greater risk for developing depressive symptoms. Using cognitive styles as the mediating variable, this hypothesis will test both the direct and indirect influences of family environment upon depressive symptomology.

*Hypothesis 4*

Mother's reports of cognitive style will affect both daughter's cognitive styles and depressive symptom severity. Specifically, higher scores on the total score of the Cognitive Triad Inventory (CTI; Beckham et al., 1986) for mothers will cause higher scores on both the total score of the CTI-C (Kaslow et al., 1992) and higher composite scores of depressive symptoms from the K-SADS-IVR (Ambrosini & Dixon, 2000) for daughters. In this hypothesized model, the relationship between maternal cognitive styles

and depressive symptoms in daughters will at least be partially mediated by daughter's cognitive styles. Therefore, mother's cognitive style will have both a direct and an indirect effect on daughter's depressive symptomology. The proposed indirect effect is that mother's cognitive styles will influence daughter's cognitive styles, which will in turn influence daughter's depressive symptomology.

*Rationale*

Literature supports the hypothesis that children adopt their respective cognitive styles by modeling the cognitive styles of their parents. Indeed, the results of studies that examine the modeling hypothesis have predominantly shown a correlation between a mother's cognitive style and those of her children (Alloy et al., 2001; Garber & Flynn, 2001; Seligman et al., 1984; Stark et al., 1996). The expected results from this hypothesis would add to the growing body of literature that demonstrates the indirect effect of parents' cognitive styles on depressive symptoms in offspring. Previous research has not explored the possible direct effect of parents' cognitive styles on depressive symptoms in their daughters. It is possible that negative cognitive styles in parents influence the development of depressive symptoms in their daughter in a manner entirely independent of depressogenic cognitions in youths. This hypothesis will provide an initial exploration of this direct path.

*Hypothesis 5*

Daughter's reports of the messages she receives from her parents regarding the self, world, and future will affect both cognitive style and depressive symptom severity. Specifically, higher scores on the total score of the Family Messages Measure (FMM; Stark et al., 1996) will correlate with higher scores on both the total score of the CTI-C

(Kaslow et al., 1992) and higher composite scores of depressive symptoms from the K-SADS-IVR (Ambrosini & Dixon, 2000) for daughters. In this hypothesized model, the relationship between parental messages related to cognitive styles and depressive symptoms in daughters will at least be partially mediated by daughter's cognitive styles. Therefore, parents' messages will have both a direct and an indirect effect on daughter's depressive symptomology. The proposed indirect effect is that parents' messages will influence daughter's cognitive styles, which will in turn influence daughter's depressive symptomology.

*Rationale*

Overall, research has supported the hypothesis that children's cognitive styles are influenced by the messages that they receive from their parents. Accordingly, parents' inferential communication to their children are correlated with their children's cognitive styles and schemas (Alloy et al., 1998; Jacquez et al., 2004; Jaenicke et al., 1987; Radke-Yarrow et al., 1990; Stark et al., 1996;). Studies have also found that messages received from fathers are particularly powerful, even more so than mothers, in contributing to the development of cognitive styles in offspring (Alloy et al., 2001; Fincham and Cain, 1986; Garber and Flynn, 2001; Stark et al., 1996; Turk and Bry, 1992). Thus, the expected results from this hypothesis would add to the growing body of literature that demonstrates the indirect effect of parental messages on depressive cognitions in offspring. Again, by including the independent variable of depressive symptoms, this hypothesis will explore how the development of these depressogenic cognitions ultimately leads to the manifestation of depressive symptoms.

Research has not yet explored the possible direct effect of parents' inferential feedback on depressive symptoms in their daughters. It is possible that negative inferential feedback from parents related to the self, world, and future influence the development of depressive symptoms in their daughters in a manner entirely independent of the development of depressogenic cognitions in youths. This hypothesis will provide an initial exploration of this direct path.

# CHAPTER 3

## Method

### *Participants*

The sample included 165 girls and 126 of their mothers. The girls were in grades 4 to 7 and ranged in age from 8 to 14 (M = 10.86, SD = 1.32). There were 83 participants attending elementary school and 82 participants attending middle school. Sixty-seven girls described their race/ethnicity as Caucasian, 49 as Latina, 22 as African American, 15 as Biracial, 4 as Asian American, and 8 girls chose not to provide that information. The sample represented a variety of living arrangements. Forty-four percent of the girls resided with both of their biological parents, 27.4% resided with their biological mother and another caregiver, 4.3% resided with their biological father and another caregiver, 15.2% resided with only their biological mother, 2.2% resided with only their biological father, and 6.5% resided in a household that did not include their biological parents. In summary, 86.8% of the sample currently resided with their biological mother and 50.7% currently resided with their biological father. See Table 1 for a complete summary of the demographic variables.

For the purposes of this investigation, two separate samples were collapsed into one. Originally, one sample was comprised of depressed adolescent females and the other of control participants. These two samples were merged in order to create a more normal continuum of depressive symptoms and analyze the data via multiple regression.

The depressed sample was comprised of 116 girls and 77 mothers who were identified through a large ongoing treatment study evaluating the efficacy of cognitive behavioral therapy for depressed pre- and early adolescent females. These participants received a primary mood diagnosis of Major Depression (*n* = 89), Dysthymic Disorder (*n* = 9), Major Depression in Partial Remission (*n*= 16), or Depressive Disorder Not Otherwise Specified (*n* = 4). However, 52.8% of girls in the depressed sample received more than one diagnosis. The control participants consisted of 49 girls and 49 of their mothers. The majority of control participants did not receive a diagnosis of a mood disorder (*n* = 47) although, one did receive a diagnosis of Dysthymia and another a diagnosis Depressive Disorder Not Otherwise Specified. None of the control participants received more than one diagnosis. Refer to Table 2 for a summary of diagnoses and comorbidity for the total sample.

Participants from the depressed group were excluded if they: a) were currently being treated for depression with an outside therapist or through pharmacological treatments, b) had psychotic symptoms, c) were actively suicidal or homicidal, d) had an IQ below 85 or a learning disability that would have prevented them from validly completing research measures, or f) had a severe medical disability that would prevent them from regularly attending meetings or completing activities. Participants from the control sample were excluded if they had an IQ below 85 or a learning disability that would have prevented them from validly completing research measures. In cases of suicidal or homicidal participants, the child was referred for a more appropriate crisis intervention.

Data from mothers who were not English speaking were excluded from the analysis ($n$ = 6). Although some mothers completed the Spanish form of the SCL-90-R, this data was not included in the analysis due to the lack of research on the validity and reliability of the Spanish version of the measure.

**Table 1**

*Participant Demographic Variables (n =165)*

| Variable | Percent |
|---|---|
| *Age* | |
| 8 | 0.6 |
| 9 | 15.9 |
| 10 | 27.1 |
| 11 | 23.2 |
| 12 | 20.7 |
| 13 | 10.4 |
| 14 | 1.8 |
| *Grade* | |
| 4 | 23.2 |
| 5 | 26.8 |
| 6 | 23.2 |
| 7 | 26.8 |
| *Living Arrangement* | |
| Biological Mother and Father | 44.2 |
| Biological Mother and Stepparent | 17.4 |
| Biological Father and Stepparent | 4.3 |
| Single Biological Mother | 15.2 |

| | |
|---|---|
| Single Biological Father | 2.2 |
| Biological Mother and Other Relatives | 5.8 |
| Biological Mother and Non-relatives | 4.3 |
| Grandparents | 2.9 |
| Other | 3.6 |
| *Race/Ethnicity* | |
| Caucasian | 40.6 |
| Latina | 29.7 |
| African American | 13.3 |
| Asian American | 2.4 |
| Biracial/Multiethnic | 9.1 |
| Missing | 4.8 |
| *School Districts* | |
| School District 1 | 23.5 |
| School District 2 | 76.5 |

**Table 2**

*Participant Diagnosis Summary (n = 165)*

| Variable | Percent |
|---|---|
| *First Diagnosis* | |
| Major Depression | 50.6 |
| Major Depression in Partial Remission | 8.0 |
| Dysthymia | 5.6 |
| Depressive Disorder Not Otherwise Specified | 3.1 |
| Generalized Anxiety | 3.1 |
| Separation Anxiety | 0.6 |
| Social Phobia | 0.6 |
| Specific Phobia | 1.2 |
| Panic Disorder | 0.6 |
| Oppositional Defiant Disorder | 0.6 |
| Attention Deficit Hyperactive Disorder | 0.6 |
| Other | 2.5 |
| No Diagnosis | 22.8 |
| *Second Diagnosis* | |
| Major Depression | 3.4 |
| Major Depression in Partial Remission | 0.7 |
| Dysthymia | 4.1 |

| | |
|---|---|
| Generalized Anxiety | 22.6 |
| Post Traumatic Stress | 2.1 |
| Separation Anxiety | 1.4 |
| Social Phobia | 0.7 |
| Specific Phobia | 5.5 |
| Panic Disorder | 0.7 |
| Anxiety Not Otherwise Specified | 2.1 |
| Oppositional Defiant Disorder | 0.7 |
| Attention Deficit Hyperactive Disorder | 2.8 |
| Other | 5.5 |
| No Diagnosis | 47.9 |
| *Third Diagnosis* | |
| Major Depression in Partial Remission | 0.7 |
| Generalized Anxiety | 4.4 |
| Post Traumatic Stress | 0.7 |
| Separation Anxiety | 2.9 |
| Specific Phobia | 2.9 |
| Obsessive Compulsive Disorder | 0.7 |
| Oppositional Defiant Disorder | 0.7 |
| Attention Deficit Hyperactive Disorder | 4.4 |
| Other | 5.2 |
| No Diagnosis | 76.5 |
| *Fourth Diagnosis* | |

| | |
|---|---|
| Specific Phobia | 3.8 |
| Social Phobia | 0.8 |
| Eating Disorder | 0.8 |
| Attention Deficit Hyperactive Disorder | 1.5 |
| Other | 3.9 |
| No Diagnosis | 89.2 |

## *Instrumentation*

### *Measures of Depression*

*Children's Depression Inventory* (CDI; Kovacs, 1981) – This questionnaire is the most commonly used self-report measure of depression for youths between the ages of 7-17 years old and will be used during the screening process in this study. It consists of 27 items that assess the presence and severity of overt depressive symptoms during the preceding two weeks. A format with three alternatives is presented for every item, with each alternative representing a different level of severity. Total scores of 19 or above indicate a significant level of depression (Kovacs, 1981). However, for screening purposes, a cut-off score of 16 or above has been shown to have the highest total predictive value. In other words, the specificity and sensitivity of the instrument are maximized when the cut-off score is 16 (Timbremont, Braet, & Dreesen, 2004).

The internal consistency of the scale has ranged from .71 to .89 within various age groups and samples (Craighead, Smucker, Craighead, & Ilardi, 1998; Kovacs, 1981; Kovacs, 1992; Smucker, Craighead, Craighead, & Green, 1986). The test-retest reliability of the scale has ranged from .38 to .87 within different samples of children (Kovacs, 1981). Since the CDI purportedly measures a state rather than a trait (Kovacs, 1992), the wide range of test-retest reliability coefficients may reflect the mood-dependent nature of the measure. A study utilizing the recommended two-week interval between administrations (Kovacs, 1992) found a test-retest reliability of .82 (Finch, Saylor, Edwards, & McIntosh, 1987). In regard to discriminant validity, some studies have found that the CDI discriminates depressive disorders from other diagnoses (e.g. Timbremont, et al., 2004) while others have not (e.g. Carey, Faulstich, Gresham, &

Ruggiero, 1987). Timbremont and colleagues (2004) found that more than 86% of participants could be correctly classified as depressed or not depressed based on their CDI score. Administration of the CDI takes approximately 10 minutes and can be administered in groups or individually. This measure will be given in the screening stage of the study. Therefore, the measure was not administered to participants from the control sample. Internal consistency for the CDI was high in the sample of depressed girls (Cronbach's alpha = .91).

*Beck Depression Inventory for Children* (BDI-Y; Beck et al., 2001) – The BDI-Y assesses the presence and severity of depressive symptoms in children between the ages of 7 -14. It includes 20 items that assess feelings of sadness, physiological symptoms of depression, and cognitive symptoms of depression. High internal consistency has been reported on the BDI-Y, with coefficient alphas reaching .92 for females ages 7 to 10 and .91 for females ages 11 to 14 (Beck et al., 2001). Test-retest reliabilities ranged from .79 to .92 over a retest interval of seven days. The BDI-Y total score is correlated with the CDI total score ($r$ = .72) (Beck et al., 2001), and this relationship is significantly greater than the correlation between the CDI and other Beck Inventories assessing constructs such as anxiety, anger, disruptive behavior, and self concepts (Steer, Kumar, Beck, & Beck, 2001). Similarly, children with a mood disorder scored significantly higher on the BDI-Y than children from other clinical groups (Beck et al., 2001). The BDI-Y will be used as a screening measure in the present study and was included in the battery of measures administered to both the depressed and control samples. Cronbach's alpha for the BDI-Y in the combined sample was high ($\alpha$ = .93).

*Diagnostic and Statistical Manual Brief Symptom Interview for Depression* (DSM Interview; Stark & Sander, 2002) – This semi-structured interview is a new measure created for the purpose of screening and monitoring depressive symptoms within the context of the ongoing depression study. Created from the DSM-IV-TR criteria for depressive disorders, the DSM Interview is a brief symptom interview that assesses present symptoms of depressive disorders. A symptom is "present" if the child reports it has been a problem for most days over the course of the past two weeks and is distressing or clinically impairing. Similarly, a rating of "present" is equivalent to a score of three or greater on the K-SADS. The DSM Interview will be used as a screening measure in this investigation.

*The Schedule for Affective Disorders and Schizophrenia for School Age Children* (K-SADS-IVR; Ambrosini & Dixon, 2000*)* – The K-SADS-IVR will be used to assess if a depressive disorder is present. This measure is a semi-structured clinical interview designed to be administered to a child, as well as parent(s), and yields a measure of the presence and absence of symptoms of DSM-IV, Axis I disorders (including depressive disorders, mania, eating disorders, anxiety disorders, behavioral disorders, substance abuse, and psychosis). The entire interview was administered. The KSADS-IVR has been modified from its previous version, the K-SADS-IIIR (Puig-Antich & Ryan, 1986), to be compatible with the DSM-IV. Ratings from the participant and her primary caregiver are obtained separately, and summary ratings are supplied by the interviewer by taking all sources of information into consideration. Each symptom is given a severity rating from its most severe point during the present episode and during the last week. Severity ratings for most items on the K-SADS-IVR are scaled from 0 to 4 or from 0 to 6.

Two items are scored 0 to 7, and several items that assess only the presence or absence of symptoms are scored 0 to 2. On all items, the higher score indicates greater severity. Symptoms are said to be clinically significant if they receive a rating of 4 or greater on the 0 to 6 scales or 3 or greater on the 0 to 4 scales. Diagnoses are made based on DSM-IV criteria.

Since the K-SADS-IVR is a relatively recent version of the K-SADS, not much psychometric data has been reported for this version. However, inter-rater reliability was found to be high for the diagnoses of Major Depression, Dysthymic Disorder, Generalized Anxiety Disorder, Separation Anxiety Disorder, and Oppositional Defiant Disorder (Ambrosini, 2000). More psychometric data is available from earlier versions of the instrument. Specifically, the K-SADS-IIIR has demonstrated high inter-rater reliability for mood disorders (Last & Strauss, 1990), along with sufficient internal consistency (Ambrosini et al., 1989) and test-retest reliability (Apter, Orvaschel, Laseg, Moses, & Tyano, 1989). Chambers and colleagues (1985) reported the test-retest reliability of the depression scales to be .67 or higher and internal consistency to be .68 or higher (Chambers et al., 1985). Ambrosini, Metz, Prabucki, & Lee (1989) reported coefficient alphas from .76 to .89 for each of the scales and intraclass coefficients from .85 to .97 among the four depression scales. Earlier versions of the K-SADS have been found to have high test-retest reliability for the diagnosis of depressive disorders (kappa = .90s) (Kaufman et al., 1997; Apter et al., 1989) and for the symptom scales (intraclass correlation coefficients = .72 - .83) (Apter et al., 1989). Test-retest reliability for the diagnoses of additional disorders ranged from kappa = .63 to 1.00 (Kaufman et al., 1997).

Overall, evidence of high diagnostic, scale, and symptom reliability support the K-SADS as a reliable diagnostic tool for use with children (Ambrosini et al., 1989).

It is also possible to obtain a continuous total depression score from the K-SADS interview. This composite symptom score consists of summing 17 depressive symptom items and ranges in score from 17 to 97 (Ambrosini et al., 1989; Ambrosini, Metz, Bianchi, Rabinovich, & Undie, 1991). The scale includes the severity ratings for the symptoms of depressed mood, irritability, diurnal mood variation (morning only), excessive guilt, anhedonia, fatigue, diurnal variation of fatigue (morning only), difficulty concentrating, psychomotor agitation, psychomotor retardation, insomnia, hypersomnia, loss of appetite, increased appetite, hopelessness, avoidant behavior when depressed, and suicidal ideation. When multiple items measure the same symptom (e.g., psychomotor agitation, psychomotor retardation, insomnia), the overall severity rating for the symptom is entered. Ambrosini and colleagues (1991) reported this total score to correlate with the Beck Depression Inventory in a sample of outpatient adolescent girls. The total depression scale score has also been found to be internally consistent, with Cronbach's alphas ranging from .80 to .89 in one study (Ambrosini et al., 1989) and a Cronbach's alpha of .72 in another study (Chambers et al., 1985). Test-retest reliability has also been found to be acceptable ($r$ = .81) for this total scale score (Chambers et al., 1985).

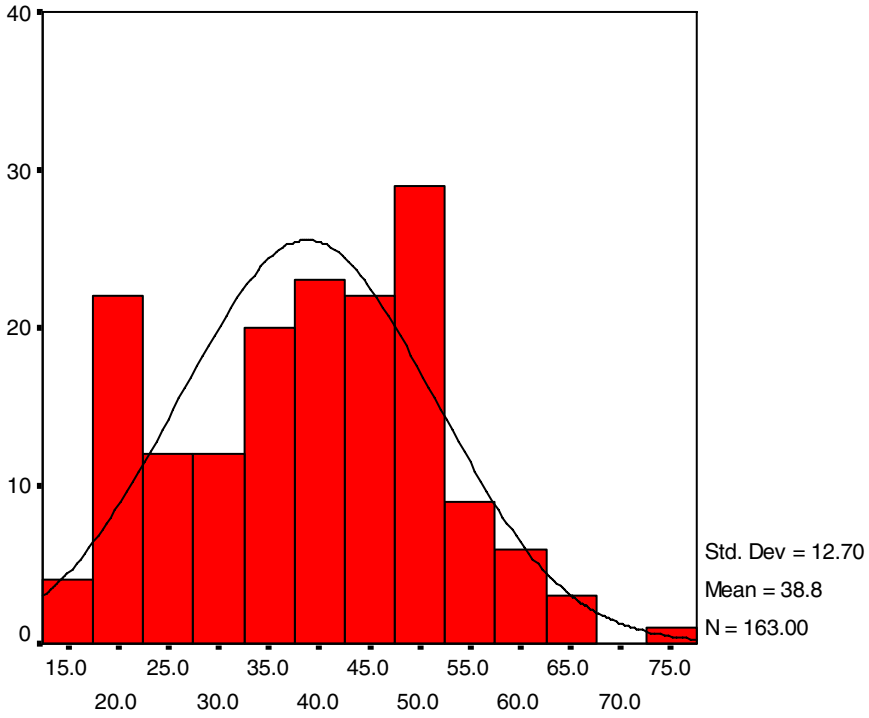
Although diagnoses from the K-SADS interview are primarily used in research rather than scale scores, in the present study there was enough variation in K-SADS depression scale scores (see Figure 1) to use the total depression score as the dependent variable. Furthermore, the concern with using the traditional total severity rating from the K-SADS as a continuous variable is that given the recruitment of the sample (depressed

and control groups), there will likely be a binomial distribution of depression scores, making it likely that linear multiple regression would be an inappropriate analysis of the data. Thus, in order to alleviate this potential problem, depression severity will be represented by the composite score.

The total depression scale score was computed for this study using the 17 item criteria used by Ambrosini and colleagues, with a few differences. The social withdrawal item was not entered because the K-SADS-P IVR does not include that item. Additionally, a self-esteem item that is not included in the K-SADS-P IVR Depression section was added to the depression scale, because low self-esteem is a central feature of Dysthymia. This item was adapted from the negative self-image item from the Overanxious Disorder section, which in the K-SADS-P IVR is an item used to diagnose Generalized Anxiety Disorder. Finally, the diurnal mood variation (morning only) and the diurnal variation of fatigue (morning only) were removed from the scale and both anhedonia (loss of interest) and anhedonia (loss of pleasure) were included. These adjustments were made to make the scale more consistent with the specific symptoms used to diagnose depression in children. Present episode summary scores were used to compute a total score from the 16 items comprising the depression scale score. The K-SADS depression scale was found to have good internal reliability in this sample ($\alpha$ = .92) and was significantly correlated with the BDI-Y ( $r$ =.522, $p \leq .001$). Inter-rater reliability was computed on 32 of the 165 interviews. The Pearson correlation between the original and reliability interviewer's total scale score from the last week summary ratings was high in this sample ($r$ = .91).

**Figure 1**

*Histogram of total depression scale scores on the K-SADS-P-IVR*



*Symptom Checklist 90-R (*SCL-90-R; Derogatis, 1983*)* – This questionnaire is a brief, multidimensional, self-report inventory designed to screen for a broad range of psychosocial problems and symptoms of psychopathology. The scale assesses severity of psychological symptoms across nine symptom dimensions including somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. The measure has 90 items assessing symptom distress on a 5 point scale (0 = not at all; 4 = extremely). Reliability and validity of the instrument have been established in numerous studies (for a review, see Derogatis, 1983). Internal consistency has ranged from a low of .77 on the psychoticism scale to a high of .90 on the depression scale (Derogatis, Rickels, & Rock, 1976; Horowitz, Rosenberg, Baer, Ureno, & Villasenor, 1988). Test-retest coefficients indicate that the measure is more stable over short periods of time (Derogatis, 1983). Re-test coefficients for the scales were between .78 and .90 over a one-week interval, but ranged from .68 to .83 when 10 weeks passed between administrations. Scales of the SCL-90 are highly correlated with corresponding scales on the Minnesota Multiphasic Personality Inventory 2 (MMPI-2; Hathaway & McKinley, 1989) and other measures of psychopathology. For the purpose of this investigation, the SCL-90-R will be utilized to assess depressive symptomology of parents. Thus, the actual SCL-90-R scale utilized in the analyses was the depression index scale. Internal consistency for the depression scale in this sample was represented by a Cronbach's alpha of .87.

*Measures of Cognition*

*Cognitive Triad Inventory* (CTI; Beckham, Leber, Watkins, Boyer, & Cook, 1986) – The CTI is a 36-item instrument designed to assess the cognitive triad of adults. Items are divided into three 12-item scales which assess views of self, world, and future. The internal reliability (coefficient alpha) of the subscales was found to be .91 for View of Self, .81 for View of World, and .93 for View of Future (Beckham et al., 1986). The three scales were sufficiently correlated to justify forming one overall scale which had a very high internal reliability of .95 (Beckham et al., 1986). In addition, the subscales and the total CTI score were shown to have good convergent and discriminant validity (Beckham et al., 1986). For the purposes of this study, the CTI will be utilized to assess the overall cognitive triad of parents. Therefore, the composite CTI scale was used in the analyses. The current study found good internal consistency for the CTI composite score (Cronbach's alpha = .87).

*Cognitive Triad Inventory for Children (*CTI-C; Kaslow et al., 1992) – This instrument is a downward revision of the CTI (Beckham et al., 1986). The measure consists of 36 items that are comprised of three 12-item scales. Each scale assesses one of three dimensions of the cognitive triad: View of the Self, View of the World, or View of the Future. A total score can be computed by compiling the scores from each scale. In order to make the CTI-C applicable to children, the wording of the original CTI items was simplified, double negatives were removed, and the content was changed to be more relevant for children. Internal consistency reliability (coefficient alpha) was found to be .83 for the self subscale, .69 for the world subscale, .85 for the future subscale, and .92 for the total scale (Kaslow et al., 1992). A more recent study conducting confirmatory

factor analysis in a sample of 122 school-aged children found the internal consistency of the total score to be .82 (Zauszniewski, Panitrat, & Youngblut, 1999). Research has also demonstrated the association between the CTI-C total score and depressive symptoms in adolescents (Jacobs & Joseph, 1997; Kaslow et al., 1992). Overall, the instrument has demonstrated acceptable internal consistency reliability and solid convergent and discriminant validity (Kaslow et al., 1992). For the purposes of this study, the CTI-C composite score was used to assess the cognitive triad of daughters. The CTI-C composite score was found to have high internal consistency in the current sample (Cronbach's alpha = .95). Moreover, the respective subscales were also found to have acceptable internal consistency (self, $\alpha = .89$; world; $\alpha = .81$; future, $\alpha = .88$).

*Measures of Family Environment*

*Self-Report Measure of Family Functioning-Child Revised* (SRMFF-CR; Stark, 2002) – The SRMFF-CR is a 40-item self-report measure of family environment and functioning. The origins of the instrument exist in Bloom's Self-Report Measure of Family Functioning (SRMFF; Bloom, 1986), a 75-item measure designed for adolescents and adults consisting of selected items from several other family functioning measures (i.e. Family Environment Scale; Moos & Moos, 1981, Family Concept Q Sort; Van der Veen, 1965, Family Adaptability and Cohesion Scales; Olson et al., 1985, Family Assessment Measure; Skinner et al., 1983). Stark and colleagues (Stark et al., 1990) modified the original SRMFF to make it applicable to children by simplifying the language, removing double negatives, and simplifying descriptive anchors to "Never," "Sometimes," and "Always," thereby creating the SRMFF-C. The current version of the measure (SRMFF-CR; Stark 2002) was modified from the SRMFF-C by eliminating

subscales with low alphas, eliminating items with low factor loadings and rewording items to be more child-friendly. Items on this measure have a five-point scale ranging from 1 (never true) to 5 (very true). The SRMFF-CR consists of six subscales: Communication, Conflict, Social/Recreational Orientation, Cohesion, Laissez-Faire Style, and Authoritarian Style. In a pilot study evaluating the psychometric properties of the SRMFF-CR (unpublished data), the following internal consistency reliabilities (coefficient alphas) were found for the subscales: Communication = .92, Conflict = .84, Social/Recreational Orientation = .85, Cohesion = .91, Laissez-Faire Style = .69, Authoritarian Style = .74. The Communication, Conflict, Social/Recreational Orientation, and Cohesion scales were used in the current study because of their theoretical relevance, consistency with previous research, and better psychometrics.

Moos (1990) suggested that research focus on broad constructs of family environment rather than many specific constructs. According to Moos and Moos (1981), family environment can be conceptualized in terms of three major dimensions, including relationships, personal growth, and system maintenance. In the current study, the Cohesion and Conflict scales both assess aspects of the family relationship, but do so from different ends of the continuum. The Cohesion subscale explores family members' feelings of connectedness, while the Conflict subscale explores the extent to which family members get along with one another. The Communication scale includes items from the expressiveness and democratic subscales of the original SRMFF, which are on two separate dimensions (relationship and system maintenance). This scale measures the degree to which family members talk about problems and rules together. The Social/Recreational Orientation subscale is on the personal growth dimension, and

measures the extent to which the family engages in social interactions with friends, and how often the family participates in hobbies, activities, and games with one another. Internal consistency for the four subscales of family environment in the current investigation was as follows: Conflict (α = .76), Communication (α = .89), Social/Recreational Orientation (α = .84), and Cohesion (α = .82).

*The Family Messages Measure* (FMM; Stark et al., 1996) – This instrument was designed to assess children's and adolescents' views of the messages they receive from their parents, and how those messages relate to the cognitive triad. The FMM was derived from the CTI and consists of 36 items that are comprised of three 12-item scales. It includes the child's perceptions of the frequency of maladaptive and adaptive messages from a parent regarding the child herself (e.g., My father tells me I can't do anything right), the world (e.g., My mother tells me that the world is a mean place), and the child's future (e.g., My mother tells me things aren't going to get any better). In addition, a total score reflecting the total negative messages can be computed by summing the three scale scores. Two parallel versions of the measure have been developed: perceived messages from mother (FMM-M) and perceived messages from father (FMM-F). Participants were asked to complete one FMM-M and one FMM-F, when applicable. Both the FMM-F (α = .90) and the FMM-M (α = .87) demonstrated strong internal consistency. Moreover, the subscales of the FMM were also found to have acceptable internal consistency (FMM-F Self, α = .81; FMM-F World, α = .65; FMM-F Future, α = .78; FMM-M Self, α = .76; FMM-M World, α = .57; FMM-M Future, α = .77).

## *Procedure*

Data for the present study was collected as part of a larger ongoing study. Participants attended fourth through seventh grades in two suburban central Texas school districts.

### *Depressed Group*

Depressed girls were identified according to a modified version of the multiple gate screening and assessment procedure recommended by Reynolds (1986). The screenings took place in participating public schools for five cohorts over the span of four years. The procedures for the screening process differed slightly for the two participating school districts due to additional research being conducted on the psychometric properties of two measures: the BDI-Y and the Children's Cognitive Style Questionnaire (CCSQ). Participants from School District 1 received the CCSQ as an additional measure at screening, while participants from School District 2 received the BDI-Y as an additional measure at screening. Procedures also differed slightly between the first cohort of participants and the second through fifth cohorts. After the first cohort was screened, the second gate of screening was modified in order to improve the efficiency and accuracy of identifying participants appropriate for a diagnostic interview.

### *School District 1*

Girls in the appropriate age range attending the participating elementary and middle schools were invited to take part in the screening process. Letters describing the study and consent forms (Appendix E) were sent home to the parents of all girls in grades 4 to 7 ($n$ = 1927). Teachers monitored the distribution and return of consent forms. In the

first gate of the screening, girls who received parental consent and assented to participate (see Appendix E) completed the CDI in large groups ($n$ = 930). As the measures were completed, they were scored by Graduate Research Assistants (GRAs). In the first cohort of participants, girls who scored above 15 on the CDI were administered another CDI one week later ($n$ = 44) as the second gate of screening. In subsequent cohorts, participants scoring above 15 on the CDI were administered a DSM-IV symptom interview with a trained GRA or doctoral level clinician as the second gate ($n$ = 114). The DSM-interview took place on the same day as the first gate of screening.

If participants scored above 15 on the second CDI administration (cohort 1), or reported depressive symptoms during the DSM-IV interview (cohorts 2 through 5), their parents were contacted over the phone and provided feedback. Moreover, participants were given a letter for their parent(s) stating their daughter had indicated she was experiencing depressive symptoms and describing the final gate of screening: the diagnostic interview. If both parent consent and child assent (see Appendix E) were given, the child and her primary caregiver independently completed the K-SADS-IVR diagnostic interview with a trained doctoral student interviewer ($n$ = 83). Participants were interviewed at their school while their parents were interviewed over the telephone, at home, or at school. Parents were interviewed in the setting that was most convenient for them, with almost all interviews conducted over the phone. Based on the combination of information from the child and the parent, DSM-IV diagnoses were assigned.

Parents were informed of the results of the interview during a feedback meeting or telephone call. If a participant was diagnosed with a depressive disorder and was eligible for participation given the parameters previously established, the parent was

given a letter describing the next phase of the study: pretreatment assessment and treatment. If both parental consent and child assent were received, the child ($n$ = 29) completed a battery of measures, including the FMM-M, FMM-F, CTI-C, BDI-Y, and SRMFF-CR, in small groups of three to four participants. Paper-and-pencil measures were administered at the participant's school by a doctoral student trained in measures administration. The GRA monitored the completion of measures and read items aloud for children with low reading levels. Children completed measures during the school day. The participants' caregivers were asked to complete a battery of measures, including the CTI and SCL-90-R. In the first cohort of participants, parent measures were sent home in the mail and returned in the mail. In subsequent cohorts, caregivers met with GRAs and completed measures during evening hours at the participants' schools.

*School District 2*

All girls in the appropriate age range attending the participating elementary and middle schools were invited to take part in the screening process. Letters describing the study and consent forms (Appendix E) were sent home to the parents of all girls in grades 4 to 7 ($n$ = 4212). Teachers monitored the distribution and return of consent forms. In the first gate of the screening, girls who received parental consent and assented to participate (see Appendix E) completed the CDI and BDI-Y in large groups ($n$ = 1828). As the measures were completed, they were scored by GRAs. In the first cohort of participants, girls who scored above 15 on the CDI were administered another CDI one week later ($n$ = 83) as the second gate of screening. In subsequent cohorts, participants scoring above 15 on the CDI or above 24 on the BDI-Y were administered a DSM-IV symptom interview

with a trained GRA or doctoral level clinician as the second gate ($n$ = 433). The DSM-IV interview took place on the same day as the first gate of screening.

If participants scored above 15 on the second CDI administration (cohort 1), or reported depressive symptoms during the DSM-IV interview (cohorts 2 through 5), their parents were contacted over the phone and provided feedback. Moreover, participants were given a letter for their parent(s) stating their daughter had indicated she was experiencing depressive symptoms and describing the final gate of screening: the diagnostic interview. If both parent consent and child assent (see Appendix E) were given, the child and her primary caregiver independently completed the K-SADS-IVR diagnostic interview with a trained doctoral student interviewer ($n$ = 219). Participants were interviewed at their school while their parents were interviewed over the telephone, at home, or at school. Parents were interviewed in the setting that was most convenient for them, with almost all interviews taking place over the phone. Based on the combination of information from the child and the parent, DSM-IV diagnoses were assigned.

Parents were informed of the results of the interview during a feedback meeting or telephone call. If a participant was diagnosed with a depressive disorder and was eligible for participation given the parameters previously established, the parent was given a letter describing the next phase of the study: pretreatment assessment and treatment. If both parental consent and child assent were received, the child completed a battery of measures ($n$ = 87), including the FMM-M, FMM-F, CTI-C, BDI-Y, and SRMFF-CR, in small groups of three to four participants. Paper-and-pencil measures were administered at the participant's school by a doctoral student trained in measures

administration. The GRA monitored the completion of measures and read items aloud for children with low reading levels. Children completed measures during the school day. The participants' caregivers were asked to complete a battery of measures, including the CTI and SCL-90-R. In the first cohort of participants, parent measures were sent home in the mail and returned in the mail. In subsequent cohorts, caregivers met with GRAs and completed measures during evening hours at the participants' schools.

*Control Group*

The control sample for the current study consisted of 49 participants from the same two suburban central Texas school districts. The 9 participants from School District 1 and 40 participants from School District 2 were all recruited on a volunteer basis. Classrooms in schools where screening had occurred were randomly selected and GRAs distributed letters describing the study, parent consent, child assent, and demographic questionnaires to girls in grades 4 to 7 (see Appendix E). School counselors monitored the return of the consent forms. If both parental consent and child assent were given, participants and their parents were assessed in their homes. Child participants completed the K-SADS-IVR interview and a battery of measures, including the CTI-C, BDI-Y, FMM-M, FMM-F, and SRMFF-CR. Parents completed the K-SADS-IVR interview and a battery of measures including the CTI and SCL-90-R. A trained K-SADS-IVR interviewer administered the interview to the parent and child, and an additional GRA monitored completion of the measures. Parents and children completed interviews and measures independently of each other. Parents were provided with feedback from the K-SADS-IVR immediately following the interview. If a child was identified as experiencing a psychological disorder other than mild anxiety,

oppositional behavior, or ADHD, her parents were given a referral to a mental health provider within their daughter's school or community. All interviews were audio taped for review and reliability purposes. Completion of all measures took an average of two hours, and families were compensated $50 per family for their participation.

*Inclusion of Measures in Analyses*

Mothers and fathers of participants in the current study completed both the SCL-90-R and the CTI. However, only mother's data from these instruments were used for the analyses. This decision was made for multiple reasons. First, not enough fathers completed these measures ($n$ = 39) to test for a significant effect on the independent variables. Secondly, there is more research documenting the importance of mother's influence than father's influence in regards to these specific constructs. There is strong evidence in the literature of the relationship between maternal depression and symptomology in children (Hammen, 2000; Hammen et al., 1990; Weissman et al, 1997). Likewise, research has demonstrated stronger support for offspring modeling their mother's cognitive style than their father's cognitive style (Alloy et al., 2001; Seligman et al., 1984; Garber & Flynn, 2001; Stark et al., 1996).

However, when a participant completed an FMM for both a mother and a father ($n$ = 154), the higher score was analyzed. In other words, the parent who the child perceived to give more negative messages was included within the analysis. This inclusion criterion was adopted because research demonstrates that messages from both mothers and fathers are important in the development of cognitive styles in children (Alloy et al, 1998; Jacquez et al, 2004; Stark et al., 1996). Furthermore, the literature suggests that receiving strong negative messages from either parent can have a powerful

impact (Jacquez et al., 2004; Radke-Yarrow et al., 1990). There were 89 participants who received more negative messages from their fathers, 75 participants who received more negative messages from their mother, and two participants who did not complete a measure for either.

*Training of Measures Administrators*

Doctoral students were trained in measures administration by the project coordinator of the larger research study. Instruction was provided on the administration and scoring of each paper-and-pencil measure. Measure administrators had at least one year of experience on the research team. When administering measures to children, at least one administrator was required to be trained in assessing suicidal ideation and intent.

*Training of Interviewers*

All K-SADS-IVR parent and child interviews were conducted by doctoral students in educational psychology. Interviewers were trained to administer the K-SADS-IVR for approximately six months by the project coordinator of the larger research study, who has expertise in the area of childhood psychopathology and the administration of semi-structured clinical interviews. Interviewers-in-training reviewed tapes of previous interviews and personally observed senior interviewers conducting the K-SADS-IVR. Approximately 50 hours of training took place before interviewers began independently conducting interviews. The interviewers-in-training also practiced interviews with volunteers under the observation of a senior interviewer. The project coordinator and head interviewer reviewed beginning interviewers' tapes and provided them with feedback. All interviewers also received weekly supervision for K-SADS-IVR

administration and scoring. Inter-rater reliability (kappa) for the K-SADS-IVR was reported in the Instruments section.

*Ethical Considerations*

This study was conducted in compliance with the ethical standards of research published by the American Psychological Association as well as with the ethical standards set forth by the University of Texas. Approval for the larger study has been obtained from the Departmental Review Committee (DRC) in the Department of Educational Psychology, the Institutional Review Board (IRB) of the University of Texas, and the superintendents of the participating school districts. Approval for this specific investigation was also obtained from the Educational Psychology DRC and the IRB of the University of Texas (IRB Protocol Number: 2006-02-0118).

# CHAPTER 4

## *Data Analyses*

Path analysis was used to determine the direct effects of mother's depressive symptoms, mother's cognitive triad, family environment, and perceived parental messages on daughter's cognitive triad and severity of depressive symptoms. Furthermore, the analyses explored the indirect effects (through the mediating variable of daughter's cognitive triad) of mother's depressive symptoms, mother's cognitive triad, family environment, and perceived parental messages on daughter's severity of depressive symptoms. Refer to figure 2 for a visual representation of the hypothesized path model.

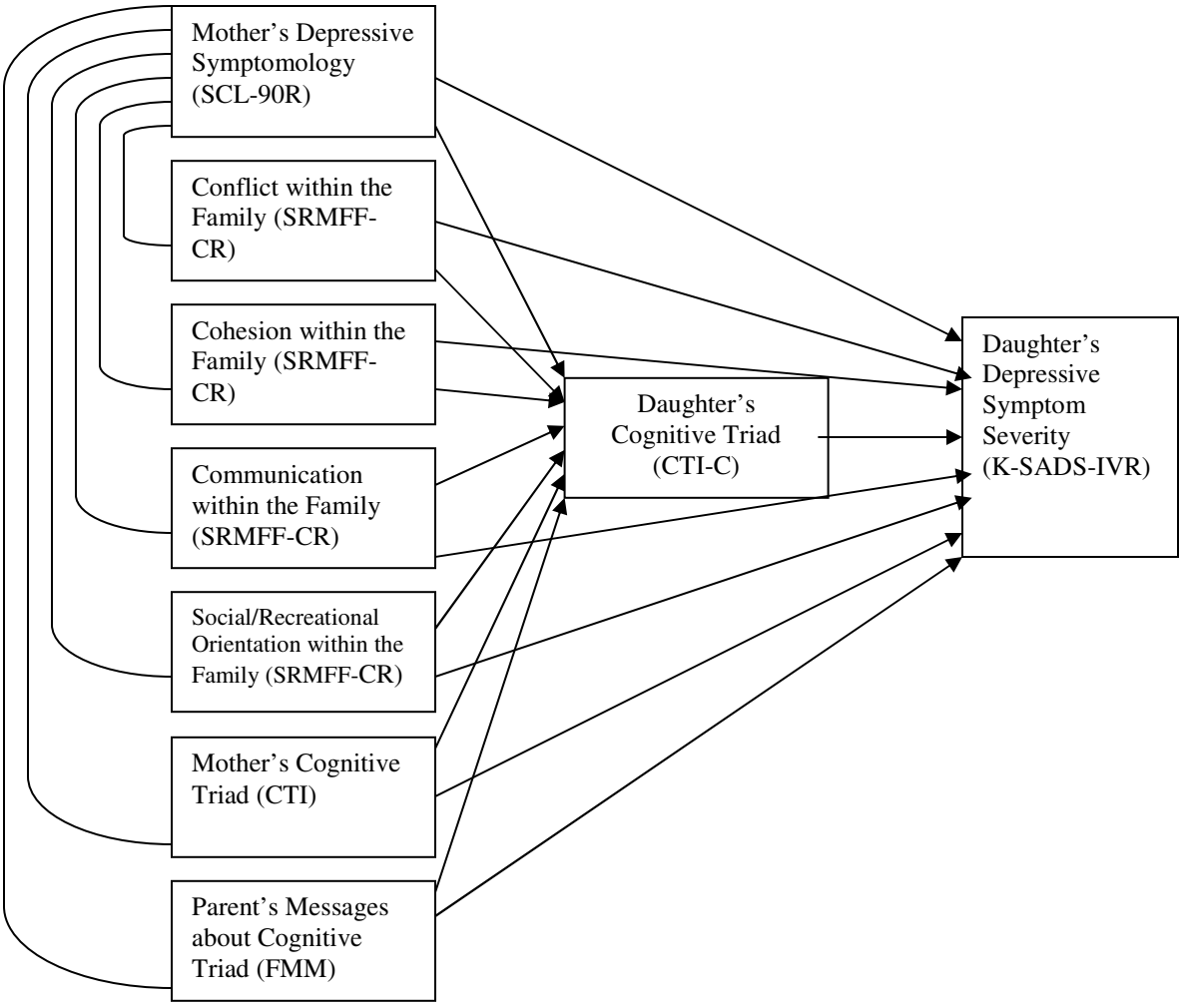
Path analysis was conducted through a series of multiple regression analyses and the paths are represented by regression weights. The model is a simple, recursive, path model, with the arrows representing a weak causal ordering (Keith, Reimers, Fehrmann, Pottebaum, & Aubey, 1986). The variables included in the path model and the presumed direction of causation is based on previous research. The arrows in the model do not imply a direct causal relation but rather suggest that if the two variables are causally related, the influence is in the direction of the arrow, rather than the opposite (Keith et al., 1986).

One of the advantages of this analysis is that it allows for the comparison of the relative effects of each of the independent variables. In other words, this model will demonstrate which of the independent variables has larger versus smaller direct and indirect effects on the severity of depressive symptoms. Previous research has shown the

importance of including all of these independent variables into the conceptualization of the etiology of depression; however, it has not explored all of these constructs concurrently. Accordingly, it is difficult at this time to make predictions about the effects of each of the independent variables. This investigation is unique in that it will demonstrate the effect of each of these variables while controlling for the effects of the others. In this manner, the present investigation intends to test a more comprehensive model of depression.

**Figure 2**

*Hypothesized Path Model*




*NOTE: Correlations are included for every combination of independent variables. This is not visually represented due to space constraints.*

## *Preliminary Analyses*

### *Missing Data*

In order to make use of the most available data and avoid the bias associated with deleting cases with missing data, values were formulated for missing items. Missing data were handled by computing the mean score of each relevant subscale for each participant. Therefore, if an item was missing for a given participant, that participant's mean score from the applicable subscale was entered. This method lacks the merit of more sophisticated statistical methods of inputting missing values, such as model-based procedures, the expectation maximization algorithm, or multiple imputations (Graham & Hofer, 2000). However, given the internal consistency of the measures and relatively minimal amount of missing items, it is likely that this procedure did not result in biased parameter estimates.

There were 39 youth participants from the depressed sample whose parents elected not to participate. These girls had completed all of the child measures, but their mothers did not complete the two parent questionnaires (SCL-90-R and CTI-P). In order to avoid removing these girls from the sample, cases were excluded pairwise in the regression analyses. This decision was made in order to further maximize the data that had been collected. Accordingly, the two measures completed by parents were represented by a smaller sample size in the regressions. The *n* for each variable is reported in the descriptive statistics section below (see Table 3)..

### *Descriptive Statistics*

Means, standard deviations, sample size, and Cronbach's alpha for the main variables are presented in Table 3. Overall, all scales had good internal consistency.

Scale intercorrelations for the SRMFF-CR are presented in Table 4. As seen from that table, subscales from the SRMFF-CR were generally intercorrelated. Scale intercorrelations for each measure used in the current investigation can be found in Appendix A.

**Table 3**

*Means, Standard Deviations, Sample Size, and Cronbach's α for Main Variables*

| Variable | M | SD | *n* | α |
|---|---|---|---|---|
| K-SADS-IVR Total Depression Scale | 38.84 | 12.72 | 162 | .92 |
| CTI-C Total Score | 20.56 | 14.43 | 162 | .95 |
| SRMFF-CR Communication Subscale | 15.06 | 7.90 | 162 | .89 |
| SRMFF-CR Conflict Subscale | 6.50 | 4.31 | 162 | .76 |
| SRMFF-CR Social/Recreational Orientation Subscale | 21.32 | 8.16 | 162 | .84 |
| SRMFF-CR Cohesion Subscale | 24.46 | 6.95 | 162 | .82 |
| FMM Total Composite Score | 17.16 | 9.56 | 161 | .88 |
| CTI Parent Total Score | 8.73 | 7.33 | 123 | .87 |
| SCL-90-R Depression Subscale | 9.55 | 8.06 | 124 | .87 |

**Table 4**

*SRMFF-CR Subscale Intercorrelations (n = 162)*

| SRMFF-CR Subscale | Communication | Conflict | Social/ Recreational | Cohesion |
|---|---|---|---|---|
| Communication | 1.00 | | | |
| Conflict | -.310 | 1.00 | | |
| Social/Recreational | .662 | -.282 | 1.00 | |
| Cohesion | .698 | -.573 | .707 | 1.00 |

*Assumptions of Multiple Regression*

Data were examined for violations of the assumptions of multiple regression. Examinations of histograms and scatterplots indicated that there were no strong outliers in the data and that the relation among the independent and dependent variables was linear. Moreover, each regression analysis was represented by a histogram of standardized residuals that showed a roughly normal curve. These histograms suggest that error was normally distributed. Lastly, the scatterplots of the standardized predicted dependent variable (K-SADS-IVR) by the standardized residuals appeared random across the range of predicted K-SADS-IVR scores. This indicates that the variance was approximately equal across predicted K-SADS-IVR scores (Kenny, 1979). In summation, the assumptions of multiple regression appear to be adequately met within this sample.

*Demographic Variables and Total Depression Score*

A series of analyses were conducted to determine whether the total K-SADS-IVR depression score was related to age, race/ethnicity, or living arrangement. The correlation between age and total K-SADS-IVR depression score was not statistically significant ($r$ = - .125, $p$ = .116). Analysis of variance (ANOVA) results indicated that K-SADS-IVR depression scores did not differ among racial/ethnic groups, $F$ (5, 154) = 1.767, $p$ = .123, or living arrangement, $F$ (8, 128) = .838, $p$ = .571.

*Parent Participation*

Although attempts were made to achieve full parent participation in completing the SCL-90-R and CTI (i.e. making appointments with parents to complete measures in person, following up by phone for measures returned via mail), a number of parents did

not complete the instruments. Moreover, there was far greater parent participation in the control sample than within the depressed sample. Sixty-four percent of mothers of children in the depressed group completed the SCL-90-R and CTI, compared to a hundred percent of the mothers of children in the control sample. Procedures of parent data collection were different for the control and depressed groups. The different method of data collection for the control and depressed groups most likely accounts for the difference between groups in terms of parent completion of the SCL-90-R and CTI.

Analyses were conducted to determine if there were mean differences between the girls whose parents participated and those whose did not on the variables of family environment, depression scores, cognitive styles, or family messages. Only the depressed group was used in this analysis to control for the difference in data collection. Accordingly, the depressed sample was divided into two groups, one group included participants whose parents had completed the SCL-90-R and CTI, and the other included those whose did not. A series of *t*-tests were conducted on the subscales of the SRMFF-CR, the K-SADS-IVR total score, the CTI-C total score, and the FMM total score. Results are displayed in Table 5. None of the *t*-tests were significant, indicating participants' reports of family communication, family cohesion, family conflict, family social/recreational orientation, daughter's severity of depressive symptoms, daughter's cognitive triad, and perceived parental messages did not differ between children whose mothers did and did not complete the parent measures.

**Table 5**

*T-Tests of SRMFF-CR Subscales, CTI-C Total Score, K-SADS-IVR Depression Score, and FMM Total Score by Parent Participation for Depressed Group (n = 116)*

| **Variables** | ***t*** | ***df*** | ***p*** | **Mean Difference** |
|---|---|---|---|---|
| Communication | .10 | 114 | .92 | .171 |
| Conflict | -.90 | 114 | .37 | -.767 |
| Social/Recreational | -.21 | 114 | .83 | -.364 |
| Cohesion | -.30 | 114 | .77 | -.439 |
| K-SADS-IVR Depression | .80 | 111 | .44 | 1.48 |
| CTI-C Total Score | .65 | 115 | .51 | 1.79 |
| FMM Total Score | -.74 | 113 | .46 | -1.42 |

*Main Analyses*

The results of the standard multiple regression analyses demonstrated that the independent variables (daughter's cognitive triad, mother's depressive symptoms, mother's cognitive triad, family conflict, family cohesion, family communication, family social/recreation, and perceived parental messages) predicted the severity of depressive symptoms in daughters to a statistically significant degree. The full model accounted for 26.5% of the variance in K-SADS-IVR scores, $R^2 = .265$, $F(8, 110) = 4.962$, $p \leq .001$. See Table 6 for these results.

Another regression analysis explored the direct effects of the parental and family variables on the mediating variable - daughter's cognitive triad. This regression demonstrated that mother's depressive symptoms, mother's cognitive triad, family conflict, family cohesion, family communication, family social/recreation, and perceived parental messages combined to explain a statistically significant amount of the variance in daughter's cognitive triad ($R^2 = .403$, $F(7,111) = 10.695$, $p \leq .001$). See Table 7 for these results.

Overall, the results of the multiple regression analyses demonstrated that the model does account for a statistically significant amount of variance in both daughter's cognitive style and daughter's depressive symptomology. The following section will report the specific effect of each independent variable by exploring the outcome of each hypothesis. Refer to Figure 2 above for a visual representation of the full hypothesized path model and to Figure 3 below for a path model with only the statistically significant effects included.

**Table 6**

*Direct Effects on Daughter's Depression (K-SADS-IVR)*

Model Summary

| R | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate |
|---|---|---|---|
| .515 | .265 | .212 | 11.290 |

ANOVA

| | Sum of Squares | *df* | Mean Square | F | *p* |
|---|---|---|---|---|---|
| Regression | 5059.388 | 8 | 632.423 | 4.962 | .000 |
| Residual | 14019.839 | 110 | 127.453 | | |
| Total | 19079.227 | 118 | | | |

Coefficients

| | Unstandardized Coefficients | | Standardized Coefficients | *t* | *p*. |
|---|---|---|---|---|---|
| | *b* | Std. Error | β | | |
| (Constant) | 25.559 | 7.793 | | 3.280 | .001 |
| CTI-C | .447 | .093 | .507 | 4.792 | .000 |
| Communication | -1.555E-02 | .201 | -.010 | -.077 | .938 |
| Conflict | -.205 | .301 | -.069 | -.683 | .496 |
| Social/Recreation | -8.335E-02 | .200 | -.054 | -.416 | .678 |
| Cohesion | .188 | .278 | .103 | .676 | .501 |
| FMM | 7.205E-02 | .150 | .054 | .480 | .632 |
| CTI | .155 | .173 | .089 | .893 | .374 |
| SCL-90-R | 2.665E-02 | .158 | .017 | .169 | .866 |

**Table 7**

*Direct Effects on Daughter's Cognitive Style (CTI-C)*

Model Summary

| R | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate |
|---|---|---|---|
| .635 | .403 | .365 | 11.497 |

ANOVA

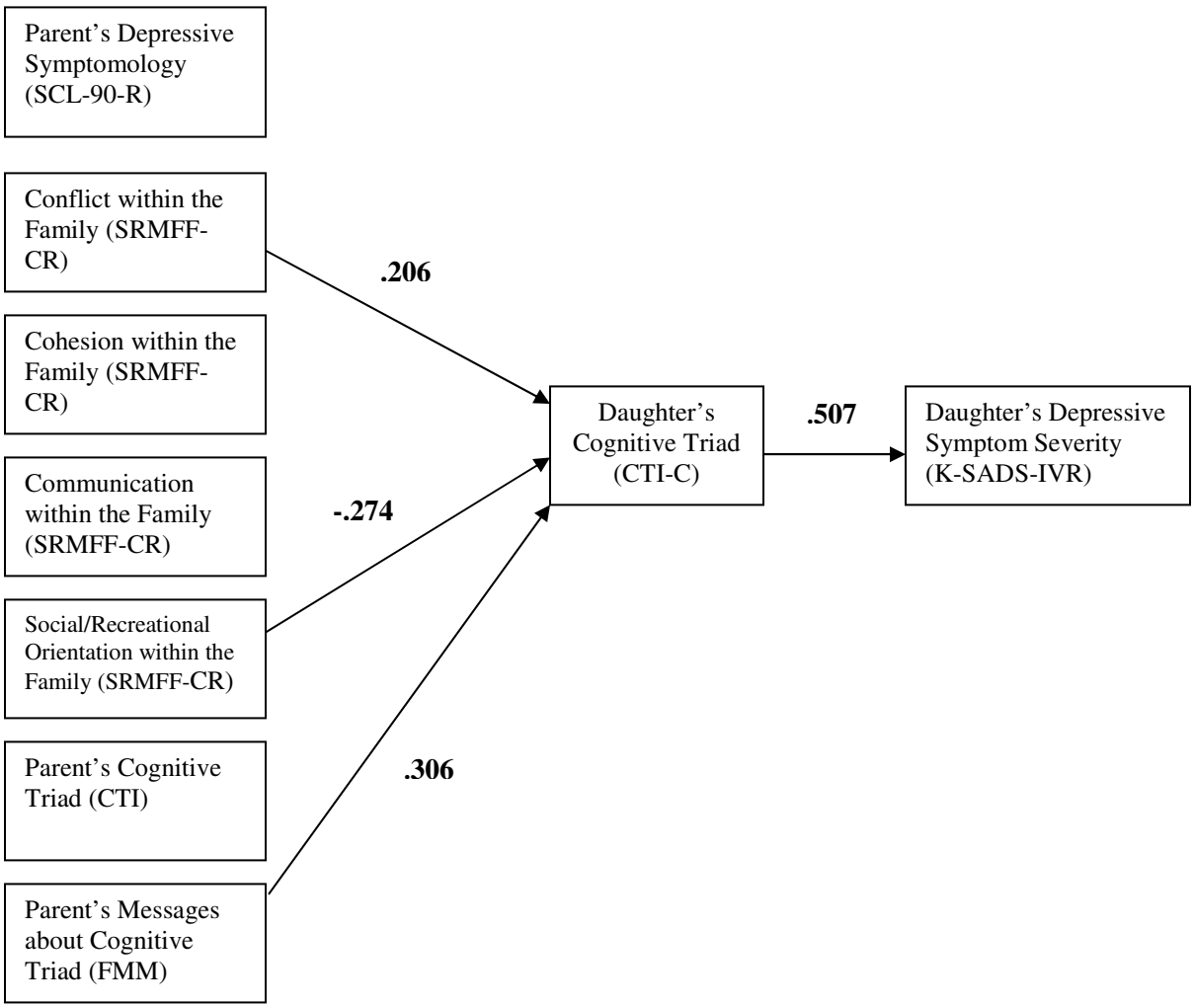
| | Sum of Squares | *df* | Mean Square | F | *p* |
|---|---|---|---|---|---|
| Regression | 9895.775 | 7 | 1413.682 | 10.695 | .000 |
| Residual | 14671.678 | 111 | 132.177 | | |
| Total | 24567.453 | 118 | | | |

Coefficients

| | Unstandardized Coefficients | | Standardized Coefficients | *t* | *p* |
|---|---|---|---|---|---|
| | *b* | Std. Error | β | | |
| (Constant) | 15.971 | 7.790 | | 2.050 | .043 |
| Communication | -.355 | .202 | -.195 | -1.762 | .081 |
| Conflict | .691 | .299 | .206 | 2.312 | .023 |
| Social/Recreation | -.484 | .199 | -.274 | -2.436 | .016 |
| Cohesion | .324 | .282 | .156 | 1.151 | .252 |
| FMM | .463 | .147 | .306 | 3.158 | .002 |
| CTI | 3.062E-02 | .176 | .016 | .174 | .862 |
| SCL-90-R | -3.956E-02 | .160 | -.022 | -.247 | .806 |

**Figure 3**

*Path Model with Statistically Significant Regression Weights*




*NOTE:*
*- Only statistically significant effects are included in this model.*
*- Paths are represented by standardized regression coefficients* (β).

*Hypothesis 1*

The first hypothesis was that daughter's report of cognitive style will affect the severity of her depressive symptom. Multiple regression was used to determine if daughter's total score on the CTI-C (combined self, world, and future) affected daughter's composite depressive symptoms scale from the K-SADS-IVR, while controlling for mother's depressive symptoms, mother's cognitive triad, perceived parental messages about the cognitive triad, family conflict, family cohesion, family communication, and family social recreational orientation. The regression weight for CTI-C ($\beta = .507$, $b = .447$, $p \leq .001$) indicates that daughter's cognitive triad significantly affected daughter's depressive symptom severity. This independent effect is significant even while controlling for the influence of the other independent variables. Moreover, this standardized regression weight ($\beta = .507$) implies that daughter's cognitive style has a strong effect on daughter's depressive symptoms. For every standard deviation change in daughters' cognitive style score (CTI-C), there is a .507 standard deviation change in daughter's depressive symptom score (K-SADS-IVR). These results are represented visually within Figure 3.

*Hypothesis 2*

The second hypothesis was that mother's reports of depressive symptoms will affect both daughter's cognitive style and the severity of daughter's depressive symptoms. Specifically, it was predicted that mother's reporting of higher scores on the depressive symptom scale of the SCL-90-R would affect daughter's reporting higher scores on the total score (combined self, world, and future) of the CTI-C and higher

scores on the composite depressive symptoms scale of K-SADS-IVR. In this hypothesized model, the relationship between maternal depression and depression in daughters was thought to be partially mediated by daughter's cognitive styles. Therefore, mother's depressive symptoms were hypothesized to have both a direct and an indirect effect on severity of daughter's depressive symptoms. The proposed path of the indirect effect was that mother's depressive symptoms will influence daughter's cognitive styles, which will in turn influence daughter's depressive symptomology.

Results from the multiple regressions did not indicate that mother's depressive symptoms have a significant direct effect on either daughter's cognitive style or daughter's depressive symptoms. Moreover, the total effect (the combination of direct and indirect effects) of maternal depression on daughter depression did not approach significance. These results were particularly surprising due to the preponderance of support for this effect found in the literature. The discussion section will address some of the potential reasons that might account for this finding, including how other family and parental variables accounted for the environmental effect of maternal depression. A summary of the regression coefficients for mother's depressive symptoms are displayed in Table 8.

**Table 8**

*Effects of Maternal Depression (SCL-90-R) on Daughter's Cognitive Triad (CTI-C) and Severity of Depressive Symptoms (K-SADS-IVR)*

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C | -.020 | -.004 | .806 |
| Direct Effect on K-SADS-IVR | .017 | .003 | .866 |
| Indirect Effect on K-SADS-IVR | -.011 | -.002 | .980 |
| Total Effect on K-SADS-IVR | .006 | .001 | .959 |

*Hypothesis 3*

The third hypothesis was that daughter's reports of family environment will affect both her cognitive style and her severity of depressive symptoms. Specifically, higher scores on the Conflict subscale and lower scores on the Communication, Cohesion, and Social/Recreational subscales of the SRMFF-CR will affect a more negative cognitive style (indicated by a higher total score on the CTI-C) and more depressive symptoms in offspring (indicated by a higher composite score of depressive symptoms from the K-SADS-IVR). In the hypothesized model, the relationship between family environment and depressive symptoms in daughters will at least be partially mediated by the daughter's cognitive style. Therefore, family environment will have both direct and indirect effects on the severity of daughter's depressive symptoms. The proposed indirect effect is that family environment will influence the daughter's cognitive style, which will in turn influence the daughter's depressive symptomology.

Results from the multiple regressions indicated that none of the family variables (Conflict, Communication, Cohesion, and Social/Recreational Orientation) had a significant total effect on severity of daughter's depressive symptoms. The Conflict ($\beta$ = .206, $b$ = .691, $p$ = .023) and Social/Recreational Orientation subscales (B = -.274, $b$ = -.484, $p$ = .016) both yielded significant direct effects on daughter's cognitive style. These findings suggest that higher conflict and less social/recreational activity in the family increases a daughter's propensity toward cognitive vulnerability to depression. Moreover, the Conflict ($\beta$ = .104, $b$ = .309, $p$ = .037) and Social/Recreational Orientation subscales ($\beta$ = -.138, $b$ = -.291, $p$ = .030) demonstrated a significant indirect effect on severity of daughter's depressive symptoms. Therefore, a family's conflict and

social/recreational orientation affected severity of daughter's depressive symptoms through the mediating variable of daughter's cognitive triad. It was surprising that these family environment variables were found to have an indirect effect, but not a total effect, on severity of daughter's depressive symptoms.

It should also be noted that the standardized regression coefficient representing the relationship between the Communication subscale and daughter's cognitive style neared, but did not reach, significance (β -.195, $b$ = -.355, $p$ = .081). These results are displayed in Table 7 and are represented visually within Figure 3.

**Table 9**

*Effects of Family Environment Variables (SRMFF-CR) on Daughter's Cognitive Triad (CTI-C) and Depressive Symptoms (K-SADS-IVR)*

Conflict

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| **Direct Effect on CTI-C** | **.206** | **.691** | **.023** |
| Direct Effect on K-SADS-IVR | -.069 | -.205 | .496 |
| **Indirect Effect on K-SADS-IVR** | **.104** | **.309** | **.037** |
| Total Effect on K-SADS-IVR | .035 | .104 | .748 |

Cohesion

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C | .156 | .324 | .252 |
| Direct Effect on K-SADS-IVR | .103 | .188 | .501 |
| Indirect Effect on K-SADS-IVR | .079 | .145 | .264 |
| Total Effect on K-SADS-IVR | .182 | .333 | .274 |

Communication

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C | -.195 | -.355 | .081 |
| Direct Effect on K-SADS-IVR | -.010 | -.002 | .938 |
| Indirect Effect on K-SADS-IVR | -.098 | -.172 | .099 |
| Total Effect on K-SADS-IVR | -.108 | -.174 | .423 |

Social/Recreational Orientation

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| **Direct Effect on CTI-C** | **-.274** | **-.484** | **.016** |
| Direct Effect on K-SADS-IVR | -.054 | -.008 | .678 |
| **Indirect Effect on K-SADS-IVR** | **-.138** | **-.291** | **.030** |
| Total Effect on K-SADS-IVR | -.192 | -.299 | .163 |

*NOTE: Bold represents statistical significance.*

*Hypothesis 4*

This hypothesis predicted that mother's reports of cognitive style would affect both daughter's cognitive style and severity of her depressive symptoms. Specifically, higher scores on the depression score of mother's CTI were hypothesized to be correlated with higher total scores on daughter's CTI-C and higher composite scores on daughter's K-SADS-IVR. In this hypothesized model, the relationship between maternal cognitive style and depressive symptom severity in daughters will at least be partially mediated by daughter's cognitive style. Therefore, mother's cognitive style will have both a direct and an indirect effect on severity of daughter's depressive symptoms. The proposed indirect effect is that mother's cognitive style will influence daughter's cognitive style, which will in turn influence severity of daughter's depressive symptoms.

Results from the multiple regressions do not indicate that mother's cognitive triad has a significant direct effect on daughter's cognitive style or daughter's depressive symptoms. The total effect of maternal cognitive style on daughter depression (the combination of the direct and indirect effects) was also not significant. Therefore, this study did not corroborate the modeling hypothesis as a significant factor in the development of depressive symptoms or cognitive vulnerability to depression in daughters, at least while controlling for the other independent variables in this model. These results are displayed in Table 10.

**Table 10**

*Effects of Mother's Cognitive Triad (CTI) on Daughter's Cognitive Triad (CTI-C) and Depressive Symptoms (K-SADS-IVR)*

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C | .016 | .003 | .862 |
| Direct Effect on K-SADS-IVR | .089 | .155 | .374 |
| Indirect Effect on K-SADS-IVR | .008 | .013 | .986 |
| Total Effect on K-SADS-IVR | .097 | .168 | .376 |

*Hypothesis 5*

The fifth hypothesis predicted that daughter's reports of the messages she receives from her parents regarding the self, world, and future will correlate with her cognitive style and severity of her depressive symptoms. Specifically, higher scores on the total score of the Family Messages Measure will be related to higher scores on the total score of the CTI-C and higher composite scores of depressive symptoms from the K-SADS-IVR for daughters. In this hypothesized model, the relationship between perceived parental messages and severity of depressive symptoms in daughters will at least be partially mediated by daughter's cognitive style. Therefore, perceived parents' messages will have both a direct and indirect effect on the severity of daughter's depressive symptoms. The proposed indirect effect is that perceived parents' messages will influence daughter's cognitive style, which will in turn influence the severity of daughter's depressive symptoms.

Results from the multiple regressions suggested that the FMM was significantly related to the CTI-C ($\beta = .306$, $b = .463$, $p = .002$). In other words, perceived negative messages from parents about the self, world, and future affect a more negative cognitive style in daughters. Moreover, the FMM demonstrated a significant indirect effect on the K-SADS-IVR ($\beta = .155$, $b = .277$, $p = .008$). This finding suggests that perceived parental messages about the cognitive triad are not only important for the development of cognitive vulnerability to depression, but are also related to the presence of actual depressive symptoms. Surprisingly, the total effect of perceived parental messages on daughter's severity of depressive symptoms approached, but did not reach, significance

(β = .209, *b* = .279, *p* = .080). These results are displayed in Table 11 and are represented visually within Figure 3.

**Table 11**

*Effects of Perceived Parental Messages about Cognitive Triad (FMM) on Daughter's Cognitive Triad (CTI-C) and Depressive Symptoms (K-SADS-IVR)*

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| **Direct Effect on CTI-C** | **.306** | **.463** | **.002** |
| Direct Effect on K-SADS-IVR | .054 | .002 | .632 |
| **Indirect Effect on K-SADS-IVR** | **.155** | **.277** | **.008** |
| Total Effect on K-SADS-IVR | .209 | .279 | .080 |

*NOTE: Bold represents statistical significance.*

## *Secondary Analysis*

### *Rationale for Secondary Analysis*

The previous analyses found multiple independent variables (family conflict, family social recreational orientation, perceived parental messages) to be significantly associated with cognitive vulnerability to depression (CTI-C) in girls. These three variables also demonstrated a significant indirect effect, via daughter's cognitive triad, on the K-SADS-IVR. However, the indirect effects on K-SADS-IVR were represented by relatively small regression coefficients. It is also noteworthy that none of these parent and family variables demonstrated a significant effect on severity of daughter's depressive symptoms when daughter's cognitive triad was removed from the regressions. Overall, the original model explains a large amount of variance in the CTI-C, but not as much variance as was expected in the K-SADS-IVR. This secondary analysis was included to explore if the model would explain more variance and if the parental and family variables would demonstrate larger effects on the severity of daughter's symptoms when utilizing an alternate measure of depression.

Upon analysis of the data, it appears that many of the girls in the depressed group may have experienced a reduction in depressive symptoms from the time of the K-SADS-IVR interview to the completion of the other measures. In general, the larger study found that many of the girls showed a decrease in presence and severity of depressive symptoms during the course of the screening and assessment process. Qualitative interviews have corroborated this tenet, as parents have noted changes in daughter's behavior during this time. Similarly, parents have noted that they change the manner in

which they relate with their daughters after receiving feedback regarding their daughter's depressive symptoms. It appears that the assessment process, and specifically the K-SADS-IVR, may have inadvertently served as a mild intervention. In this sample, the time between the completion of the K-SADS-IVR and the other measures ranged from three days to two weeks. Therefore, it is also likely that regression to the mean is occurring during this time period.

A reduction in symptoms may detract from the statistical relation among severity of daughter's depressive symptoms (K-SADS-IVR) and the independent variables. In order to adjust for this reduction in symptoms, the previous regression analyses were completed with the BDI-Y depression score substituted for the K-SADS-IVR depression score. A BDI-Y was completed by the daughters during the same sitting as the other measures. Therefore, the use of this measure eliminates the time gap between measures described above.

*Descriptive Statistics for Secondary Analysis*

Means, standard deviations, sample size, and Cronbach's alpha for the main variables are presented in Table 12.

**Table 12**

*Means, Standard Deviations, Sample Size, and Cronbach's α in Secondary Analysis*

| Variable | M | SD | *n* | α |
|---|---|---|---|---|
| BDI-Y Total Depression Score | 19.47 | 12.69 | 165 | . |
| CTI-C Total Score | 20.48 | 14.43 | 165 | .95 |
| SRMFF-CR Communication | 15.13 | 7.98 | 165 | .89 |
| SRMFF-CR Conflict | 6.42 | 4.32 | 165 | .76 |
| SRMFF-CR Social/Recreational Orientation | 21.33 | 8.24 | 165 | .84 |
| SRMFF-CR Cohesion | 24.53 | 7.00 | 165 | .82 |
| FMM Total Composite Score | 17.15 | 9.48 | 164 | .88 |
| CTI Total Score | 8.65 | 7.30 | 125 | .87 |
| SCL-90-R Depression Subscale | 9.56 | 8.04 | 126 | .87 |

*Results for Secondary Analysis*

The results of the standard multiple regression analyses demonstrated that the independent variables (daughter's cognitive triad, mother's depressive symptoms, mother's cognitive triad, family conflict, family cohesion, family communication, and family social/recreation orientation) significantly predicted more variance in depressive symptoms than was accounted for in the K-SADS-IVR interview. The full model accounted for 64 percent of the variance of the BDI-Y [$R^2 = .644$, $F(8, 112) = 25.321$, $p \leq .001$]. This was a considerable increase from the 27 percent of the K-SADS-IVR variance that was explained in the previous path analysis.

There were also multiple independent variables that demonstrated significant effects on daughter's depressive symptoms. As found in the first analysis, daughter's cognitive style had a robust direct effect on daughter's depressive symptomology ($\beta = .763$, $b = .671$, $p \leq .001$). Perceived parental messages about the cognitive triad (FMM), family conflict (SRMFF-CR), and family social/recreational orientation (SRMFF-CR) again displayed significant indirect effects on severity of daughter's depressive symptoms (BDI-Y) through the mediating variable of daughter's cognitive triad (CTI-C). Moreover, each of these variables had significant total effects on the BDI-Y. In other words, each of these variables demonstrated a significant impact on the severity of daughter's depressive symptoms when daughter's cognitive triad was removed from the regression analyses. These results are presented in Table 13. Figure 4 is a visual representation of the statistically significant regression weights within this path model.

**Table 13**

*Summary of Regression Coefficients Affecting Severity of Depressive Symptoms (BDI-Y) in Daughters*

Daughter's Cognitive Style (CTI-C)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| **Direct Effect on BDI-Y** | **.763** | **.671** | **.000** |

Mother's Depressive Symptoms (SCL-90-R)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C | -.026 | -.005 | .772 |
| Direct Effect on BDI-Y | .042 | .007 | .543 |
| Indirect Effect on BDI-Y | -.019 | -.003 | .990 |
| Total Effect on BDI-Y | .023 | .004 | .816 |

Mother's Cognitive Triad (CTI)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C | .016 | .003 | .861 |
| Direct Effect on BDI-Y | -.058 | -.102 | .399 |
| Indirect Effect on BDI-Y | .011 | .094 | .986 |
| Total Effect on BDI-Y | -.047 | -.008 | .629 |

Perceived Parental Messages about Cognitive Triad (FMM)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| **Direct Effect on CTI-C** | **.296** | **.452** | **.002** |
| Direct Effect on BDI-Y | .013 | .002 | .868 |
| **Indirect Effect on BDI-Y** | **.226** | **.318** | **.003** |
| **Total Effect on BDI-Y** | **.239** | **.320** | **.023** |

Family Cohesion (SRMFF-CR)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C | .146 | .302 | .281 |
| Direct Effect on BDI-Y | -.061 | -.111 | .563 |
| Indirect Effect on BDI-Y | .111 | .120 | .282 |
| Total Effect on BDI-Y | .050 | .009 | .733 |

Family Communication (SRMFF-CR)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C | -.204 | -.369 | .067 |
| Direct Effect on BDI-Y | .116 | .185 | .186 |
| Indirect Effect on BDI-Y | -.155 | -.191 | .069 |
| Total Effect on BDI-Y | -.039 | -.006 | .744 |

Family Conflict (SRMFF-CR)

| | β | *b* | *p* |
|---|---|---|---|
| **Direct Effect on CTI-C** | **.196** | **.656** | **.027** |
| Direct Effect on BDI-Y | .052 | .153 | .475 |
| **Indirect Effect on BDI-Y** | **.150** | **.441** | **.029** |
| **Total Effect on BDI-Y** | **.202** | **.594** | **.037** |

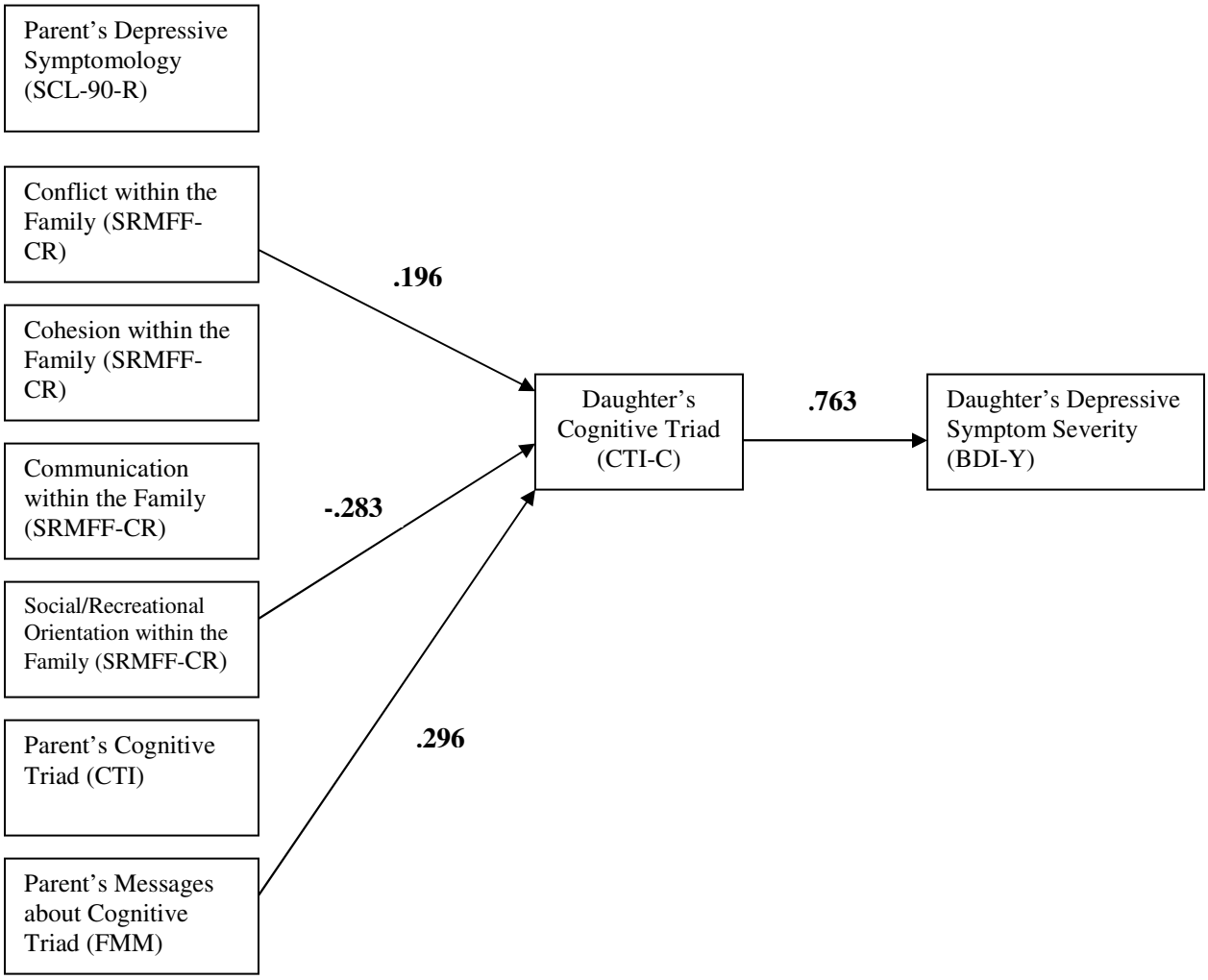
Family Social/Recreational Orientation (SRMFF-CR)

| | β | *b* | *p* |
|---|---|---|---|
| **Direct Effect on CTI-C** | **-.283** | **-.497** | **.013** |
| Direct Effect on BDI-Y | -.061 | -.009 | .496 |
| **Indirect Effect on BDI-Y** | **-.217** | **.-.419** | **.014** |
| **Total Effect on BDI-Y** | **-.278** | **-.428** | **.025** |

*NOTE: Bold represents statistical significance.*

**Figure 4**

*Path Model with Statistically Significant Regression Weights for Secondary Analysis*




*NOTE:*
*- Only statistically significant effects are included in this model.*
*- Paths are represented by standardized regression coefficients* (β).

## *Exploratory Analyses*

The following analyses were included to build on the previous results and provide additional information regarding the effects of the independent variables on daughter's cognitive style and severity of depressive symptoms. These analyses provide an opportunity to examine the effects of various subscales on the independent variables. The BDI-Y was used as the measure of depressive symptoms in these analyses. The discussion will review the findings of these exploratory analyses, how they relate to the original hypothesized model, and the relevance to previous research in the field.

### *Descriptive Statistics for Exploratory Analysis*

Means, standard deviations, sample size, and Cronbach's alpha for the main variables are presented in Table 14.

**Table 14**

*Means, Standard Deviations, Sample Size, and Cronbach's α in Exploratory Analyses*

| Variable | M | SD | *n* | α |
|---|---|---|---|---|
| BDI-Y Total Depression | 19.47 | 12.69 | 165 | .93 |
| SRMFF-CR Communication | 15.13 | 7.98 | 165 | .89 |
| SRMFF-CR Conflict | 6.42 | 4.32 | 165 | .76 |
| SRMFF-CR Social/Recreational Orientation | 21.33 | 8.24 | 165 | .84 |
| SRMFF-CR Cohesion | 24.53 | 7.00 | 165 | .82 |
| CTI Total | 8.65 | 7.30 | 125 | .87 |
| SCL-90-R Depression | 9.56 | 8.04 | 126 | .87 |
| CTI-C Total | 20.48 | 14.43 | 165 | .95 |
| CTI-C Beliefs about the Self | 6.80 | 5.79 | 156 | .89 |
| CTI-C Beliefs about the World | 7.49 | 4.73 | 156 | .81 |
| CTI-C Beliefs about the Future | 6.54 | 5.09 | 156 | .88 |
| FMM Composite Score (highest parent) | 17.15 | 9.48 | 164 | .88 |
| FMM-F Composite Score | 15.00 | 9.23 | 155 | .90 |
| FMM-M Composite Score | 13.88 | 8.35 | 164 | .87 |
| FMM Messages about the Self (highest parent) | 5.27 | 3.80 | 156 | .78 |
| FMM-F Messages about the Self | 4.44 | 3.74 | 146 | .81 |
| FMM-M Messages about the Self | 3.93 | 3.19 | 155 | .76 |
| FMM Messages about the World (highest Parent) | 5.91 | 2.98 | 156 | .60 |
| FMM-F Messages about the World | 5.38 | 2.94 | 146 | .65 |
| FMM-M Messages about the World | 4.88 | 2.55 | 156 | .57 |
| FMM Messages about the Future (highest parent) | 6.25 | 3.91 | 156 | .77 |
| FMM-F Messages about the Future | 5.21 | 3.74 | 146 | .78 |
| FMM-M Messages about the Future | 4.92 | 3.66 | 156 | .77 |

*Exploratory Analysis 1: Examining the Perceived Messages of Mothers and Fathers Independently*

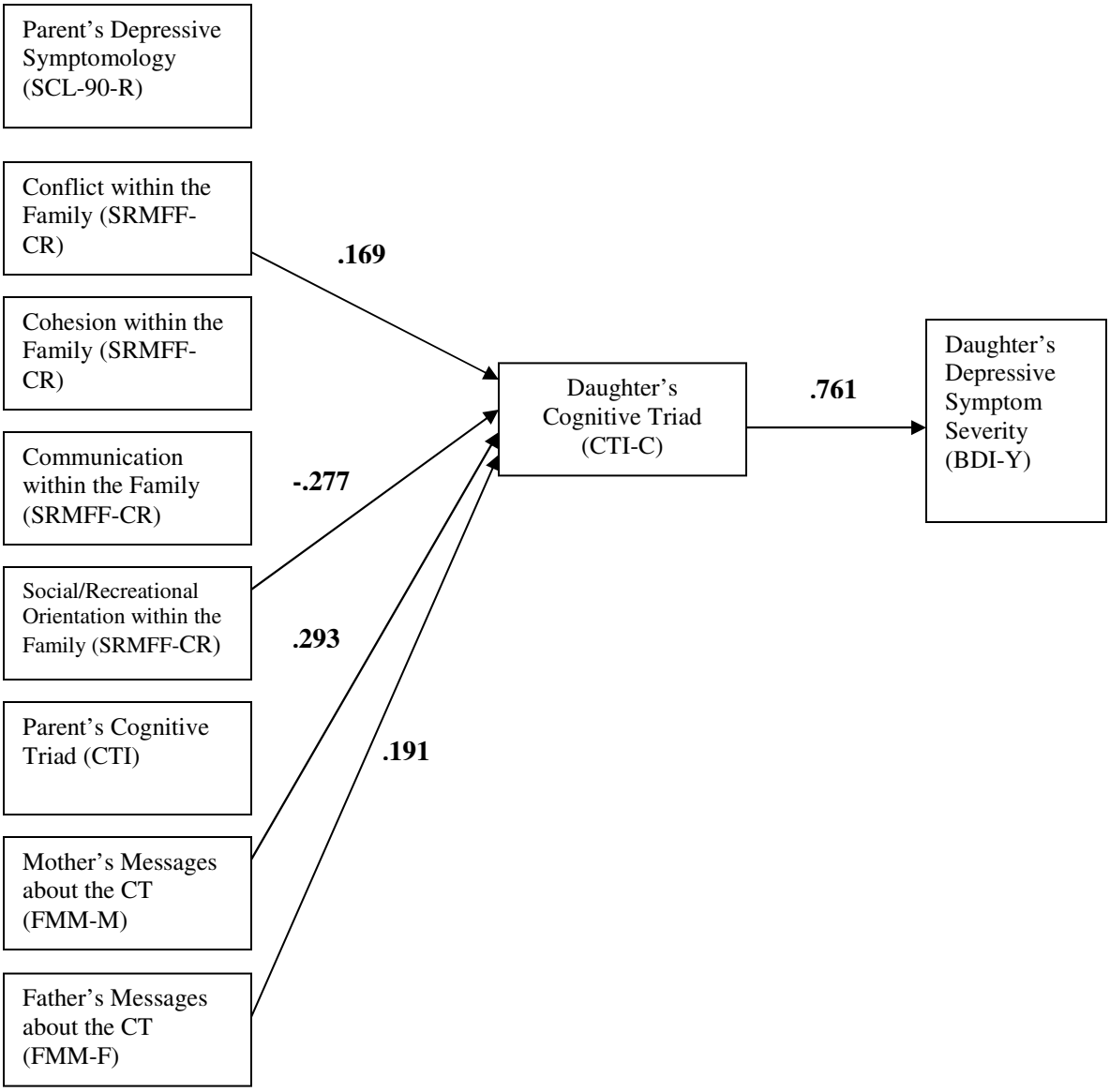
In the original analyses, the most negative parental messages, be it from mother or father, were included within the regressions. This inclusion criterion was supported by research suggesting that negative messages from either a mother or a father were a predictor of cognitive vulnerability to depression. However, these exploratory analyses provide the opportunity to further inspect the data and investigate whether messages from mothers or fathers exert a different or more powerful influence on this hypothesized model of depression. In order to examine this question, the FMM-M and FMM-F were both entered simultaneously into the model. This analysis demonstrates the effect of perceived parental messages from each parent, while controlling for the perceived parental messages from the other parent.

The regressions yielded a model that explained 64.5 percent of the variance in BDI-Y [$R^2 = .645$, $F(9,104) = 20.969$, $p \leq .001$] and 45.4 percent of the variance in CTI-C [$R^2 = .454$, $F(8,105) = 10.895$, $p \leq .001$]. The standardized regression coefficient representing the effect of FMM-M (M = 13.88) on CTI-C was $\beta = .293$ ($b = .506$, $p = .002$) and the standardized regression coefficient representing the effect of FMM-F (M = 15.00) on CTI-C was $\beta = .191$ ($b = .299$, $p = .042$). Both the FMM-M ($\beta = .223$, $b = .325$, $p = .003$) and the FMM-F ($\beta = .146$, $b = 240$, $p = .045$) demonstrated significant indirect effects on the BDI-Y. However, the FMM-M showed a significant total effect on the BDI-Y ($\beta = .214$, $b = .324$, $p = .040$), while the FMM-F did not. These findings suggest that perceived messages from mothers may be more related to the cognitive triad and severity of depressive symptoms of daughters relative to perceived messages from

fathers. However, it is difficult to determine whether messages from mothers or the most negative messages from either parent had a more powerful effect on the dependent variables. Refer to the discussion section for further extrapolation on these results. Table 15 contains a summary of the regression coefficients from these regressions and Figure 5 presents a visual representation of the model.

**Figure 5**

*Path Model with Statistically Significant Regression Weights for Exploratory Analysis 1 (including both FMM-F and FMM-M)*




*NOTE:*
*- Only statistically significant effects are included in this model.*
*- Paths are represented by standardized regression coefficients* (β).

**Table 15**

*Summary of Regression Coefficients for Exploratory Analysis 1 (including both FMM-F and FMM-M)*

Perceived Paternal Messages about the Cognitive Triad – (FMM-F)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| **Direct Effect on CTI-C** | **.191** | **.299** | **.042** |
| Direct Effect on BDI-Y | .032 | .004 | .678 |
| **Indirect Effect on BDI-Y** | **.146** | **.240** | **.045** |
| Total Effect on BDI-Y | .178 | .244 | .088 |

Perceived Maternal Messages about the Cognitive Triad (FMM-M)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| **Direct Effect on CTI-C** | **.293** | **.506** | **.002** |
| Direct Effect on BDI-Y | -.009 | -.001 | .909 |
| **Indirect Effect on BDI-Y** | **.223** | **.325** | **.003** |
| **Total Effect on BDI-Y** | **.214** | **.324** | **.040** |

Mother's Cognitive Triad (CTI-P)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C | .011 | .022 | 903 |
| Direct Effect on BDI-Y | -.060 | -.105 | .407 |
| Indirect Effect on BDI-Y | .008 | .096 | .901 |
| Total Effect on BDI-Y | -.052 | -.009 | .601 |

Mother's Depressive Symptoms (SCL-90-R)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C | -.008 | -.015 | .926 |
| Direct Effect on BDI-Y | .039 | .006 | .588 |
| Indirect Effect on BDI-Y | -.006 | -.001 | .926 |
| Total Effect on BDI-Y | .033 | .005 | .739 |

Family Cohesion (SRMFF- CR)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C | .208 | .430 | .131 |
| Direct Effect on BDI-Y | -.061 | -.110 | .588 |
| Indirect Effect on BDI-Y | .158 | .287 | .132 |
| Total Effect on BDI-Y | .097 | .177 | .522 |

Family Communication (SRMFF- CR)

| | β | *b* | *p* |
|---|---|---|---|
| Direct Effect on CTI-C | -.187 | -.339 | .098 |
| Direct Effect on BDI-Y | .127 | .202 | .171 |
| Indirect Effect on BDI-Y | -.142 | -.204 | .100 |
| Total Effect on BDI-Y | -.015 | -.002 | .901 |

Family Social/Recreational Orientation (SRMFF-CR)

| | β | *b* | *p* |
|---|---|---|---|
| **Direct Effect on CTI-C** | **-.277** | **-.486** | **.015** |
| Direct Effect on BDI-Y | -.069 | -.107 | .461 |
| **Indirect Effect on BDI-Y** | **-.211** | **-.325** | **.017** |
| **Total Effect on BDI-Y** | **-.280** | **-.432** | **.027** |

Family Conflict (SRMFF-CR)

| | β | *b* | *p* |
|---|---|---|---|
| **Direct Effect on CTI-C** | **.259** | **.404** | **.007** |
| Direct Effect on BDI-Y | .053 | .155 | .469 |
| Indirect Effect on BDI-Y | .128 | .376 | .061 |
| Total Effect on BDI-Y | .181 | .531 | .067 |

*NOTE: Bold represents statistical significance.*

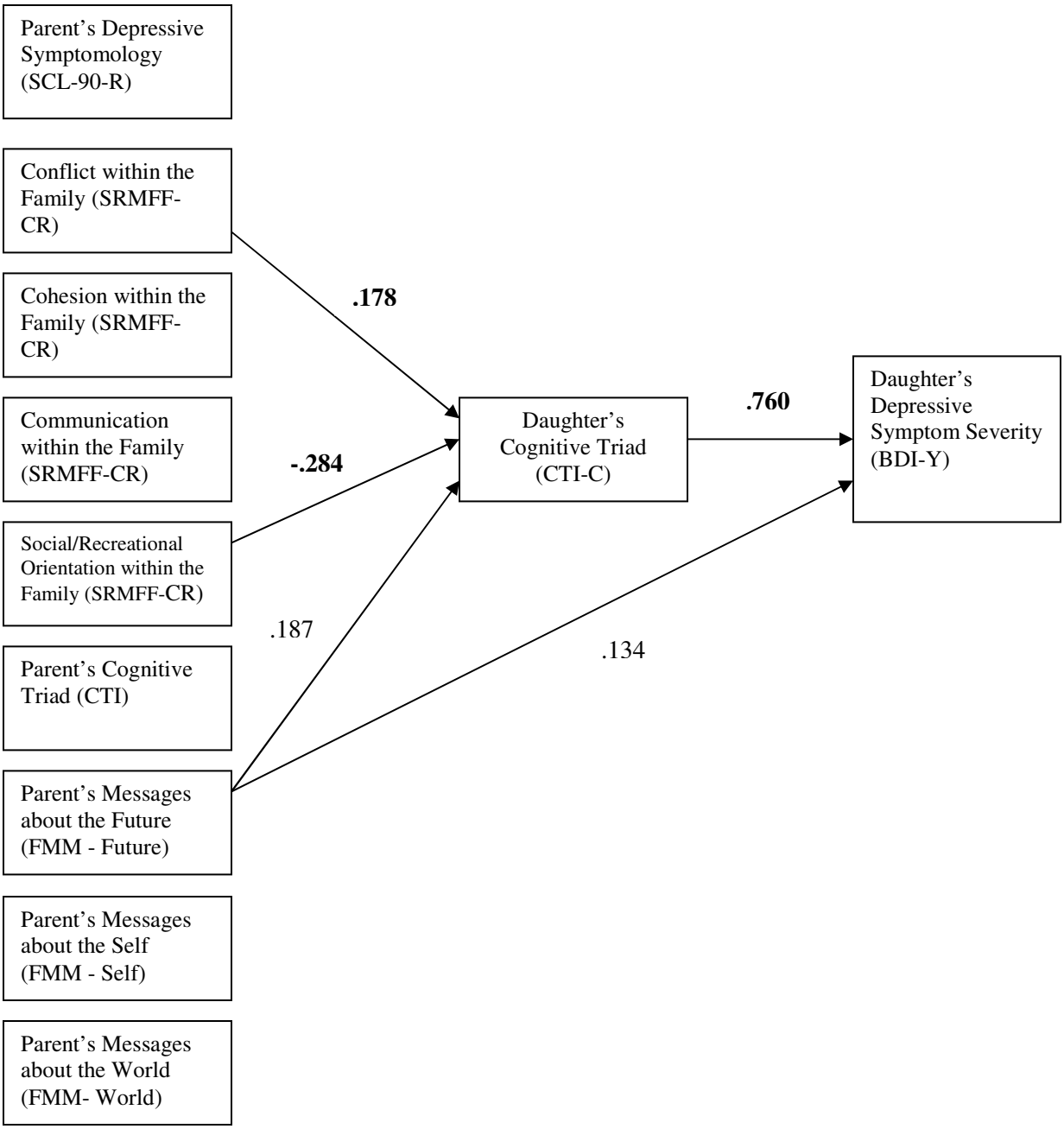
*Exploratory Analysis 2: Examining the Three Subscales of the Family Messages Measure*

The purpose of these analyses was to individually explore the three different types of parental messages from the FMM. The above hypotheses explored parental messages about the cognitive triad as one construct, but did not look at the individual effects of messages about the self, world, and future. It is possible that negative messages in one of these schematic areas have a greater effect on the development of daughter's cognitive triad than the others. In order to explore this theory, all three subscales of the CTI-C were entered concurrently into the path model. These analyses demonstrate the effect of each subscale of the FMM, while controlling for the other variables in the model, including the other subscales of the FMM. In order to most accurately compare these analyses with the original model, the FMM with the most negative messages were entered into the regressions.

Results from the regression analysis including all three subscales of the FMM accounted for 65.1 percent of the total variance in daughter's depressive symptoms [BDI-Y; $R^2 = .651$, $F(10, 109) = 20.338$, $p \leq .001$] and 41.9 percent of the total variance in daughter's cognitive triad [CTI-C; $R^2 = .419$, $F(9, 110) = 8.872$, $p \leq .001$]. When including all three subscales of the FMM, none of the FMM subscales demonstrated a statistically significant effect on daughter's cognitive triad, with messages about the future being the closest to significance ($\beta = .187$, $b = 691$, $p = .129$). FMM-Future did have a significant total effect on the severity of depressive symptoms in daughters ($\beta = .276$. $b = .897$, $p = .039$). These findings may suggest that it is preferable to conceptualize the perceived parental messages about the cognitive triad as one construct. The Social/Recreational Orientation subscale from the SRMFF-CR also had a significant

total effect on the BDI-Y (β = -.290, *b* = -.447, *p* = .020). Both the Social/Recreational Orientation (β = -.216, *b* = -.333, *p* = .015) and the Conflict subscales (β = .136, *b* = -.397, *p* = .05) had a significant indirect effect on the BDI-Y. Table 16 has a summary of the regression coefficients from these analyses and Figure 6 presents a visual representation of the model.

**Figure 6***Path Model with Statistically Significant Regression Weights for Exploratory Analysis 2 (including all three subscales of the FMM)*




*NOTE:*

- *Paths are represented by standardized regression coefficients* (β).
- *Bold represents statistical significance. Paths from FMM-Future are included because, although neither the direct or indirect path was significant, the total effect of FMM-Future on BDI-Y was significant.*

**Table 16**

*Summary of Regression Coefficients for Exploratory Analysis 2 (including all three subscales of the FMM)*

Perceived Parental Messages about the Self – (FMM-Self)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C | .020 | .076 | .874 |
| Direct Effect on BDI-Y | -.063 | -.212 | .522 |
| Indirect Effect on BDI-Y | .015 | .051 | .875 |
| Total Effect on BDI-Y | -.048 | -.161 | .727 |

Perceived Parental Messages about the World (FMM-World)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C | .148 | .720 | .192 |
| Direct Effect on BDI-Y | -.067 | -.284 | .453 |
| Indirect Effect on BDI-Y | .113 | .480 | .192 |
| Total Effect on BDI-Y | .046 | .196 | .708 |

Perceived Parental Messages about the Future (FMM-Future)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C | .187 | .691 | .129 |
| Direct Effect on BDI-Y | .134 | .436 | .165 |
| Indirect Effect on BDI-Y | .142 | .461 | .130 |
| **Total Effect on BDI-Y** | **.276** | **.897** | **.039** |

Mother's Cognitive Triad (CTI)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C | .005 | .010 | .954 |
| Direct Effect on BDI-Y | -.051 | -.088 | ,466 |
| Indirect Effect on BDI-Y | .004 | .080 | .955 |
| Total Effect on BDI-Y | -.047 | -.008 | .629 |

Mother's Depressive Symptoms (SCL-90-R)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C | -.021 | -.038 | .815 |
| Direct Effect on BDI-Y | .032 | .050 | .650 |
| Indirect Effect on BDI-Y | -.016 | -.047 | .813 |
| Total Effect on BDI-Y | .016 | .003 | .872 |

Family Cohesion (SRMFF-CR)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C | .146 | .303 | .294 |
| Direct Effect on BDI-Y | -.083 | -.150 | .449 |
| Indirect Effect on BDI-Y | .112 | .155 | .294 |
| Total Effect on BDI-Y | .029 | .005 | .849 |

Family Communication (SRMFF-CR)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C | -.191 | -.346 | .091 |
| Direct Effect on BDI-Y | .131 | .208 | .142 |
| Indirect Effect on BDI-Y | -.145 | -.210 | .092 |
| Total Effect on BDI-Y | -.014 | -.002 | .906 |

Family Social/Recreational Orientation (SRMFF-CR)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| **Direct Effect on CTI-C** | **-.284** | **-.499** | **.014** |
| Direct Effect on BDI-Y | -.074 | -.114 | .417 |
| **Indirect Effect on BDI-Y** | **-.216** | **-.333** | **.015** |
| **Total Effect on BDI-Y** | **-.290** | **-.447** | **.020** |

Family Conflict (SRMFF-CR)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| **Direct Effect on CTI-C** | **.178** | **.595** | **.050** |
| Direct Effect on BDI-Y | .037 | .110 | .602 |
| **Indirect Effect on BDI-Y** | **.136** | **.397** | **.050** |
| Total Effect on BDI-Y | .173 | .507 | .081 |

*NOTE: Bold represents statistical significance.*

*Exploratory Analysis 3: Examining the Three Subscales of the Cognitive Triad*

The purpose of this analysis is to individually explore the three belief domains of the cognitive triad. The above hypotheses examined the cognitive triad as one construct, but did not look at the individual effects of beliefs about the self, world, and future on severity of depressive symptoms. It is possible that negative beliefs in one of these schematic areas have a greater effect on the presence of depressive symptoms. In order to explore this question, all three subscales of the CTI-C (self, world, and future) were entered simultaneously into the regression model. Therefore, beliefs about the self, world, and future replaced the composite cognitive triad score as the mediating variables in the model. This analysis demonstrates the individual effects of each of the subscales while controlling for the effect of the other subscales.

Including all three subscales of the CTI-C along with the other independent variables in the regression analysis produced a model that explained 65.3 percent of the total variance in the BDI-Y [$R^2 = .653$, $F(10,109) = 20.495$, $p \leq .001$]. Comparably, the model using the CTI-C composite score accounted for 64.5 percent of the total variance in BDI-Y. The CTI-C Self and CTI-C Future subscales both demonstrated significant effects on the BDI-Y, while the CTI-C World subscale did not. The effect of the CTI-C Self subscale was represented by a $\beta = .353$ ($b = .775$, $p = .004$), the effect of the CTI-C Future subscale was represented by a $\beta = .288$ ($b = .424$, $p = .012$), and the effect of the CTI-C World subscale was represented by a $\beta = .158$ ($b = .720$, $p = .136$). These results suggest that of the three domains of the cognitive triad, daughter's beliefs about the self may be related most to severity of depressive symptoms. Daughter's beliefs about the future also correlate with daughter's severity of depressive symptoms, but perhaps not as

strongly as beliefs about the self. Finally, daughter's beliefs about the world did not have a significant effect on severity of depressive symptoms while controlling for the other variables in the model, including daughter's beliefs about the self and future. Refer to Table 17 for a summary of regression coefficients.

**Table 17**

*Summary of Significant Regression Coefficients for Secondary Analysis 3*

Direct Effects on BDI-Y

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| **CTI-C Self** | **.353** | **.775** | **.004** |
| CTI-C World | .158 | .424 | .136 |
| **CTI-C Future** | **.288** | **.720** | **.012** |
| SCL-90-R | .025 | .039 | .723 |
| CTI | -.053 | -.091 | .452 |
| SRMFF-CR - Cohesion | -.049 | -.089 | .646 |
| SRMFF-CR - Communication | .118 | .188 | .182 |
| SRMFF-CR - Conflict | .065 | .190 | .355 |
| SRMFF-CR – Social/Recreational Orientation | -.093 | -.143 | .304 |
| FMM | .024 | .032 | .757 |

*NOTE: Bold represents statistical significance.*

*Exploratory Analysis 4: Examining the Effects of Subscales of the FMM on Subscales of the CTI-C*

These analyses were included to help answer questions about how each subscale of the FMM influences independent subscales of the CTI-C. For example, do perceived parental messages about the future independently influence daughter's beliefs about the future or do they affect daughter's entire cognitive triad? By concurrently entering all three FMM subscales into a series of regressions with a subscale from the CTI-C, these exploratory analyses will hopefully shed light on questions such as this. Furthermore, these analyses will demonstrate the individual effect each subscale of the CTI-C has on the BDI-Y without controlling for the influence of the other subscales of the CTI-C. Again, the most negative messages from either parent were entered into these analyses.

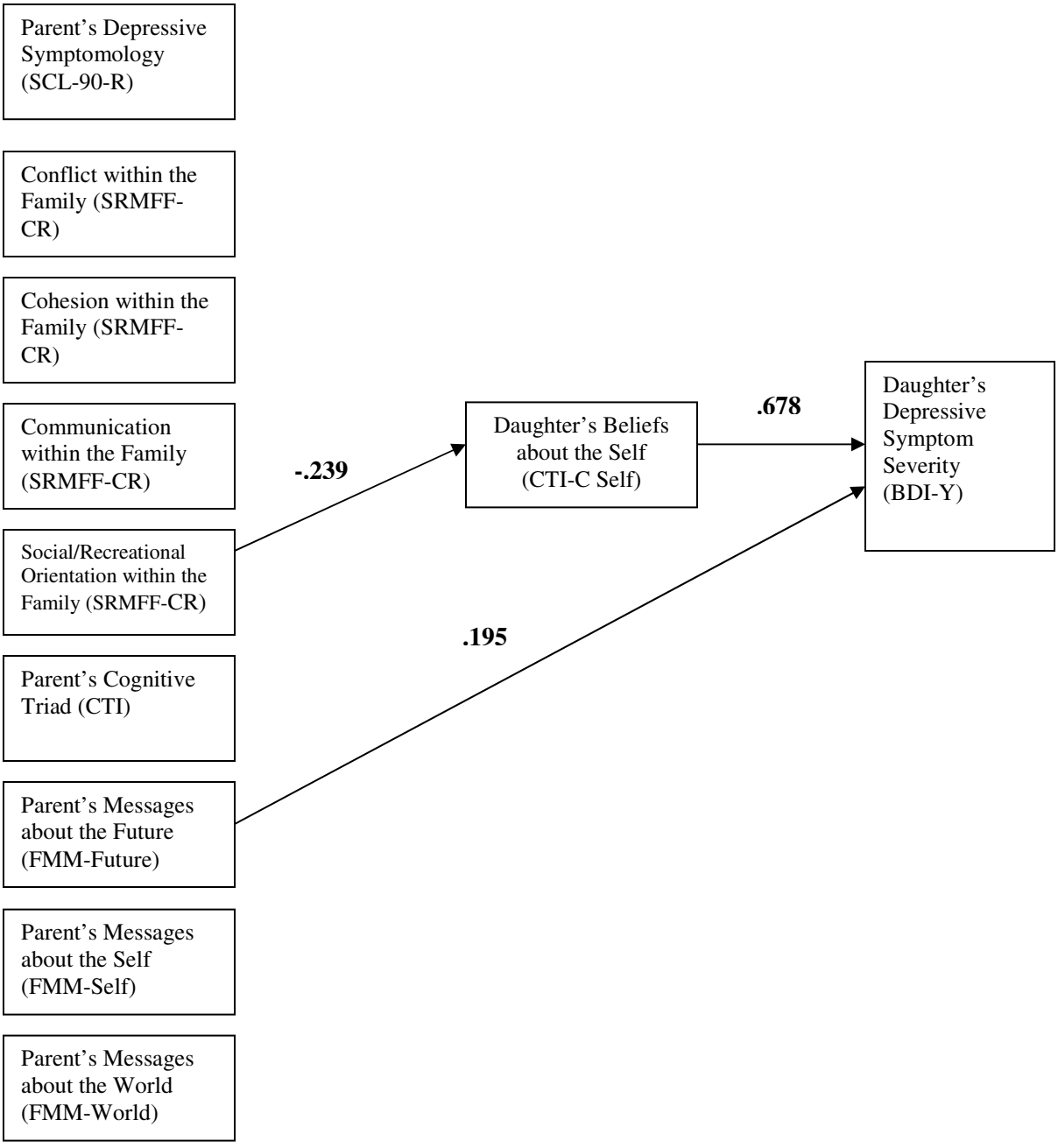
Entering only the CTI-C Self subscale as the mediating variable in regression analyses, while including all three subscales of the FMM, yielded a model that accounted for 63.2 percent of the total variance in the BDI-Y [$R^2 = .632$, $F (10, 109) = 18.731$, $p \leq .001$]. CTI-C Self demonstrated a strong statistically significant effect on BDI-Y ($\beta = .678$, $b = 1.490$, $p \leq .001$). Interestingly, perceived parental messages about the future also demonstrated a significant direct effect on BDI-Y ($\beta = .195$, $b = .633$, $p = .049$) while controlling for the other variables in the model, notably including CTI-C Self. The model also accounted for 31.1 percent of the variance in CTI-C Self [$R^2 = .311$, $F (9, 110) = 5.519$, $p \leq .001$]. Of the other independent variables, only family Social/Recreational Orientation (SRMFF-CR) demonstrated a statistically significant direct effect on CTI-C Self ($\beta = -.239$, $b = -.167$, $p = .050$). Table 18 contains a summary of the regression coefficients and Figure 7 visually represents the model.

Entering only the CTI-C World subscale as the mediating variable in regression analyses, while including all three subscales of the FMM, yielded a model that accounted for 53.9 percent of the total variance in the BDI-Y [$R^2 = .539$, $F (10, 109) = 12.761$, $p \leq .001$]. CTI-C World demonstrated a statistically significant effect on BDI-Y ($\beta = .631$, $b = 1.697$, $p \leq .001$). The model also accounted for 43.9 percent of the variance in CTI-C World [$R^2 = .439$, $F (10, 110) = 9.552$, $p \leq .001$]. More predictably, perceived parental messages about the world (FMM-World) demonstrated a significant effect on daughter's beliefs about the world (CTI-World; $\beta = .263$, $b = .417$, $p = .020$). The Social/Recreational Orientation subscale from the SRMFF-CR also was found to have a significant effect on CTI-World ($\beta = -.254$, $b = -.145$, $p = .025$). Refer to Table 19 for a summary of the regression coefficients and to Figure 8 for a visual representation.

Entering only the CTI-C Future subscale as the mediating variable in regression analyses, while including all three subscales of the FMM, yielded a model that accounted for 59.8 percent of the total variance in the BDI-Y [$R^2 = .598$, $F (10, 109) = 16.193$, $p \leq .001$]. CTI-C Future demonstrated a statistically significant effect on BDI-Y ($\beta = .658$, $b = 1.644$, $p \leq .001$). The model also accounted for 34.9 percent of the variance in CTI-C Future [$R^2 = .349$, $F (9, 110) = 6.552$, $p \leq .001$]. Perceived parental messages about the future (FMM-Future) demonstrated a significant direct effect on daughter's beliefs about the future (CTI-Future; $\beta = .296$, $b = .385$, $p = .024$) and a significant indirect effect on BDI-Y ($\beta = .195$, $b = .633$, $p = .027$). The Social/Recreational Orientation subscale from the SRMFF-CR also demonstrated a statistically significant effect on CTI-C Future ($\beta = -.232$, $b = -.145$, $p = .050$). See Table 20 for a summary of the regression coefficients from these analyses and Figure 9 for a visual representation of the model.

**Figure 7**

*Path Model with Statistically Significant Regression Weights for Exploratory Analysis 4 (substituting CTI-C Self for CTI-C Total and including all three subscales of the FMM)*




*NOTE:*
*- Only statistically significant effects are included in this model.*
*- Paths are represented by standardized regression coefficients* (β).

**Table 18**

*Summary of Regression Coefficients for Exploratory Analysis 4 (substituting CTI-C Self for CTI-C Total and including all three subscales of the FMM)*

Daughter's Beliefs about the Self (CTI-C Self)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on BDI-Y | .678 | 1.490 | .000 |

Perceived Parental Messages about the Self (FMM-Self)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C Self | .105 | .161 | .445 |
| Direct Effect on BDI-Y | -.199 | -.400 | .241 |
| Indirect Effect on BDI-Y | .151 | .239 | .445 |
| Total Effect on BDI-Y | -.048 | -.161 | .727 |

Perceived Parental Messages about the World (FMM-World)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C Self | .272 | .136 | .263 |
| Direct Effect on BDI-Y | -.046 | -.196 | .613 |
| Indirect Effect on BDI-Y | .092 | .392 | .274 |
| Total Effect on BDI-Y | .046 | .196 | .708 |

Perceived Parental Messages about the Future (FMM-Future)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C Self | .120 | .177 | .370 |
| **Direct Effect on BDI-Y** | **.195** | **.633** | **.049** |
| Indirect Effect on BDI-Y | .081 | .264 | .145 |
| **Total Effect on BDI-Y** | **.276** | **.897** | **.039** |

Mother's Cognitive Triad (CTI)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C Self | .029 | .023 | .768 |
| Direct Effect on BDI-Y | -.066 | -.115 | .355 |
| Indirect Effect on BDI-Y | .019 | .107 | .765 |
| Total Effect on BDI-Y | -.047 | -.008 | .629 |

Mother's Depressive Symptoms (SCL-90-R)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C Self | -.018 | -.013 | .851 |
| Direct Effect on BDI-Y | .028 | .004 | .694 |
| Indirect Effect on BDI-Y | -.012 | -.002 | .853 |
| Total Effect on BDI-Y | .016 | .002 | .872 |

Family Cohesion (SRMFF-CR)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C Self | .206 | .170 | .175 |
| Direct Effect on BDI-Y | -.111 | -.202 | .323 |
| Indirect Effect on BDI-Y | .140 | .207 | .178 |
| Total Effect on BDI-Y | .029 | .005 | .849 |

Family Communication (SRMFF-CR)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C Self | -.174 | -.126 | .157 |
| Direct Effect on BDI-Y | .104 | .165 | .255 |
| Indirect Effect on BDI-Y | -.128 | -.167 | .157 |
| Total Effect on BDI-Y | -.014 | -.002 | .906 |

Family/Social Recreational Orientation (SRMFF-CR)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| **Direct Effect on CTI-C Self** | **-.239** | **-.167** | **.050** |
| Direct Effect on BDI-Y | -.128 | -.197 | .167 |
| Indirect Effect on BDI-Y | -.162 | -.250 | .059 |
| **Total Effect on BDI-Y** | **-.290** | **-.447** | **.020** |

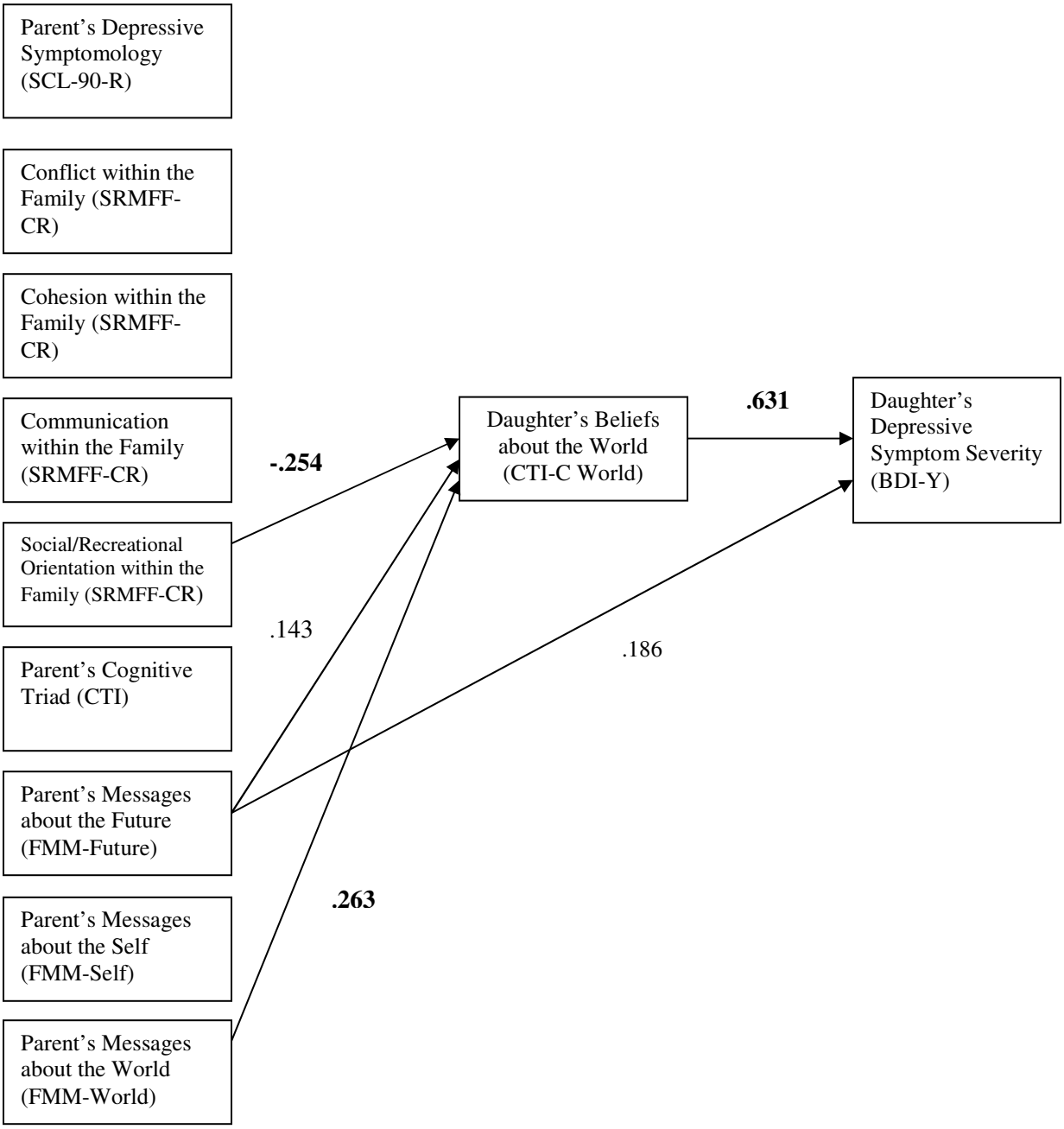
Family Conflict (SRMFF-CR)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C Self | .181 | .242 | .068 |
| Direct Effect on BDI-Y | .050 | .146 | .500 |
| Indirect Effect on BDI-Y | .123 | .361 | .072 |
| Total Effect on BDI-Y | .173 | .507 | .081 |

*NOTE: Bold represents statistical significance.*

**Figure 8**

*Path Model with Statistically Significant Regression Weights for Exploratory Analysis 4 (substituting CTI-C World for CTI-C Total and including all three subscales of the FMM)*




*NOTE:*

- *Paths are represented by standardized regression coefficients* (β).
- *Bold represents statistical significance. Paths from FMM-Future are included because, although neither the direct or indirect path was significant, the total effect of FMM-Future on BDI-Y was significant.*

**Table 19**

*Summary of Regression Coefficients for Exploratory Analysis 4 (substituting CTI-C World for CTI-C Total and including all three subscales of the FMM)*

Daughter's Beliefs about the World (CTI-C World)

| | β | *b* | *p* |
|---|---|---|---|
| **Direct Effect on BDI-Y** | **.631** | **1.697** | **.000** |

Perceived Parental Messages about the Self (FMM-Self)

| | β | *b* | *p* |
|---|---|---|---|
| Direct Effect on CTI-C World | -.081 | -.101 | .516 |
| Direct Effect on BDI-Y | .003 | .001 | .978 |
| Indirect Effect on BDI-Y | -.051 | -.162 | .516 |
| Total Effect on BDI-Y | -.048 | -.161 | .727 |

Perceived Parental Messages about the World (FMM-World)

| | β | *b* | *p* |
|---|---|---|---|
| **Direct Effect on CTI-C World** | **.263** | **.417** | **.020** |
| Direct Effect on BDI-Y | -.120 | -.511 | .250 |
| **Indirect Effect on BDI-Y** | **.166** | **.707** | **.024** |
| Total Effect on BDI-Y | .046 | .196 | .708 |

Perceived Parental Messages about the Future (FMM-Future)

| | β | *b* | *p* |
|---|---|---|---|
| Direct Effect on CTI-C World | .143 | .173 | .235 |
| Direct Effect on BDI-Y | .186 | .603 | .094 |
| Indirect Effect on BDI-Y | .090 | .294 | .240 |
| **Total Effect on BDI-Y** | **.276** | **.897** | **.039** |

Mother's Cognitive Triad (CTI)

| | β | *b* | *p* |
|---|---|---|---|
| Direct Effect on CTI-C World | -.058 | -.038 | .508 |
| Direct Effect on BDI-Y | -.010 | -.002 | .899 |
| Indirect Effect on BDI-Y | -.037 | -.006 | .507 |
| Total Effect on BDI-Y | -.047 | -.008 | .629 |

Mother's Depressive Symptoms (SCL-90-R)

| | β | *b* | *p* |
|---|---|---|---|
| Direct Effect on CTI-C World | .014 | .008 | .871 |
| Direct Effect on BDI-Y | .007 | .001 | .933 |
| Indirect Effect on BDI-Y | .009 | .001 | .878 |
| Total Effect on BDI-Y | .016 | .002 | .872 |

Family Cohesion (SRMFF-CR)

| | β | *b* | *p* |
|---|---|---|---|
| Direct Effect on CTI-C World | .047 | .032 | .732 |
| Direct Effect on BDI-Y | -.001 | .000 | .994 |
| Indirect Effect on BDI-Y | .030 | .005 | .728 |
| Total Effect on BDI-Y | .029 | .005 | .849 |

Family Communication (SRMFF-CR)

| | β | *b* | *p* |
|---|---|---|---|
| Direct Effect on CTI-C World | -.197 | -.117 | .077 |
| Direct Effect on BDI-Y | .110 | .175 | .282 |
| Indirect Effect on BDI-Y | -.124 | -.177 | .081 |
| Total Effect on BDI-Y | -.014 | -.002 | .906 |

Family Social/Recreational Orientation (SRMFF-CR)

| | β | *b* | *p* |
|---|---|---|---|
| **Direct Effect on CTI-C World** | **-.254** | **-.145** | **.025** |
| Direct Effect on BDI-Y | -.130 | -.200 | .213 |
| **Indirect Effect on BDI-Y** | **-.160** | **-.247** | **.031** |
| **Total Effect on BDI-Y** | **-.290** | **-.447** | **.020** |

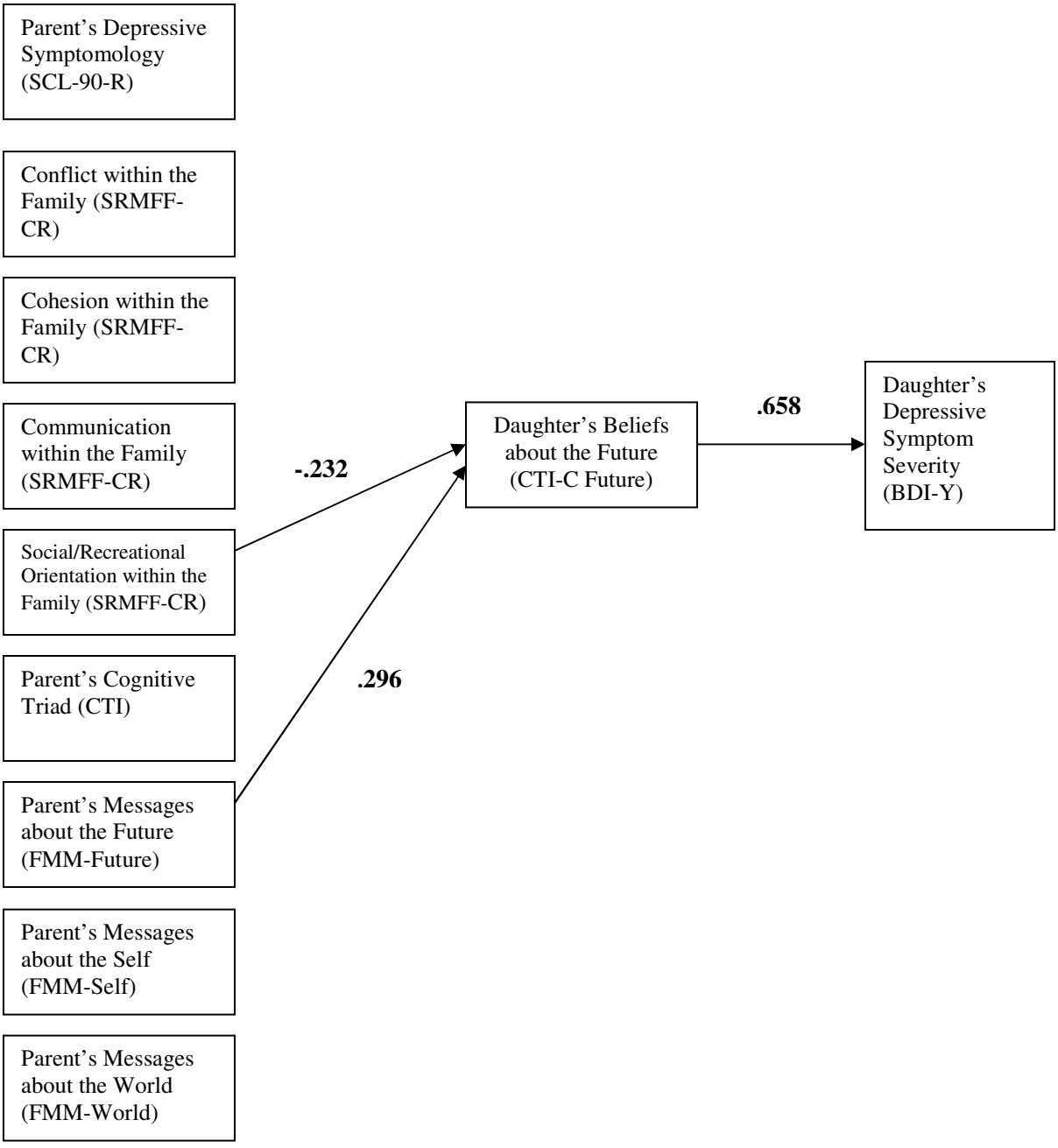
Family Conflict (SRMFF-CR)

| | β | *b* | *p* |
|---|---|---|---|
| Direct Effect on CTI-C World | .122 | .133 | .174 |
| Direct Effect on BDI-Y | .096 | .282 | .242 |
| Indirect Effect on BDI-Y | .077 | .225 | .178 |
| Total Effect on BDI-Y | .173 | .507 | .081 |

*NOTE: Bold represents statistical significance.*

**Figure 9**

*Path Model with Statistically Significant Regression Weights for Exploratory Analysis 4 (substituting CTI-C Future for CTI-C Total and including all three subscales of the FMM)*




*NOTE:*
*- Only statistically significant effects are included in this model.*
*- Paths are represented by standardized regression coefficients* (β).

**Table 20**

*Summary of Regression Coefficients for Exploratory Analysis 4 (substituting CTI-C Future for CTI-C Total and including all three subscales of the FMM)*

Daughter's Beliefs about the Future (CTI-C Future)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| **Direct Effect on BDI-Y** | **.658** | **1.644** | **.000** |

Perceived Parental Messages about the Self (FMM-Self)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C Future | -.013 | -.018 | .922 |
| Direct Effect on BDI-Y | .081 | .264 | .439 |
| Indirect Effect on BDI-Y | -.129 | -.425 | .920 |
| Total Effect on BDI-Y | -.048 | -.161 | .727 |

Perceived Parental Messages about the World (FMM-World)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C Future | .008 | .014 | .944 |
| Direct Effect on BDI-Y | .040 | .173 | .669 |
| Indirect Effect on BDI-Y | .006 | .023 | .945 |
| Total Effect on BDI-Y | .046 | .196 | .708 |

Perceived Parental Messages about the Future (FMM-Future)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| **Direct Effect on CTI-C Future** | **.296** | **.385** | **.024** |
| Direct Effect on BDI-Y | .081 | .264 | .439 |
| **Indirect Effect on BDI-Y** | **.195** | **.633** | **.027** |
| **Total Effect on BDI-Y** | **.276** | **.897** | **.039** |

Mother's Cognitive Triad (CTI)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C Future | .003 | .002 | .977 |
| Direct Effect on BDI-Y | -.049 | -.008 | .515 |
| Indirect Effect on BDI-Y | .002 | .000 | .976 |
| Total Effect on BDI-Y | -.047 | -.008 | .629 |

Mother's Depressive Symptoms (SCL-90-R)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C Future | -.008 | -.005 | .935 |
| Direct Effect on BDI-Y | .021 | .003 | .781 |
| Indirect Effect on BDI-Y | -.005 | -.001 | .934 |
| Total Effect on BDI-Y | .016 | .002 | .872 |

Family Cohesion (SRMFF-CR)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C Future | .063 | .045 | .671 |
| Direct Effect on BDI-Y | -.012 | -.002 | .915 |
| Indirect Effect on BDI-Y | .041 | .007 | .674 |
| Total Effect on BDI-Y | .029 | .005 | .849 |

Family Communication (SRMFF-CR)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C Future | -.166 | -.105 | .166 |
| Direct Effect on BDI-Y | .095 | .150 | .320 |
| Indirect Effect on BDI-Y | -.109 | -.152 | .172 |
| Total Effect on BDI-Y | -.014 | -.002 | .906 |

Family Social/Recreational Orientation (SRMFF-CR)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| **Direct Effect on CTI-C Future** | **-.232** | **-.143** | **.050** |
| Direct Effect on BDI-Y | -.138 | -.212 | .156 |
| Indirect Effect on BDI-Y | -.152 | -.235 | .059 |
| **Total Effect on BDI-Y** | **-.290** | **-.447** | **.020** |

Family Conflict (SRMFF-CR)

| | **β** | ***b*** | ***p*** |
|---|---|---|---|
| Direct Effect on CTI-C Future | .137 | .161 | .155 |
| Direct Effect on BDI-Y | .082 | .242 | .283 |
| Indirect Effect on BDI-Y | .091 | .265 | .160 |
| Total Effect on BDI-Y | .173 | .507 | .081 |

*NOTE: Bold represents statistical significance.*

# CHAPTER 5

## Discussion

### *Overview of Findings*

Results build upon existing research on cognitive style and family environment with respect to depression and raise important questions about the unique influence of these independent variables on the presence and severity of depression in pre-adolescent females.

The most consistent and robust finding was that daughter's cognitive style is strongly related to the presence of depressive symptoms. Therefore, adolescent girls who possess a negative cognitive style (i.e. negative beliefs about the self, world, and future) are at an increased risk for possessing more severe depressive symptoms. One of the advantages regarding this design is that depressive symptoms in daughters were assessed with a comprehensive diagnostic interview. These findings do not merely indicate a correlation between a paper-and-pencil questionnaire assessing schemas and a questionnaire assessing depressive symptoms. Rather, the results demonstrate that cognitive style is significantly related to the presence of depressive symptoms as rated by trained mental health professionals.

Overall, results supported the cognitive triad as the primary mediating variable in this model. Family variables and parental messages were consistently found to affect the presence of daughter's negative beliefs about the self, world, and future. Furthermore, none of the family and parental variables demonstrated a significant direct effect on daughter's depressive symptoms, even though family environment is a well established

risk factor to depression in youths. Therefore, this model confirmed that family and parental factors influence daughter's interpretations and beliefs regarding the self, world, and future, which are related to the severity of depressive symptoms. This is also an important distinction that has great relevance to the conceptualization and treatment of depression in pre-adolescent girls.

It was interesting that the original analyses found that the parental and family variables had a significant indirect effect on severity of daughter's depressive symptoms, but did not have a significant total effect (sum of direct and indirect effects) on severity of daughter's depressive symptoms. This discrepancy is likely a product of the different calculations of significance that are required for indirect and total effects. However, these findings raised some questions about the power and fit of this model in explaining severity of depressive symptoms in pre-adolescent girls. Specifically, why did the original regression analyses find that none of these parental and family variables had a significant total effect on daughter's K-SADS-IVR score? And why did the family variables demonstrate small indirect effects on the K-SADS-IVR?

There are several possible explanations for these findings. First, Beck's theory of depression is a cognitive-diathesis stress model. That is, Beck contends that cognitive vulnerability to depression does not necessarily imply depressive symptoms, unless that individual encounters stressful or negative life events. Thus, there is an interaction between cognitive style and negative life events that often precipitates full-blown depression. It was difficult to conceptualize the interaction of stress and cognitive style in this model, because many of the parental and family variables could be conceptualized as life stressors. Therefore, including an independent measure of life stress as a

mediating variable seemed redundant. Moreover, it is difficult to create a measure of negative life events that accurately and independently assesses the impact of stressors in the lives of pre-adolescents.

Another explanation is that reported depressive symptoms decreased from the time of the K-SADS-IVR interview to the time that the remainder of the measures was completed; some participants experienced a time gap of up to two weeks. This hypothesis is supported by the fact that substituting the BDI-Y for the K-SADS-IVR interview yielded results where the independent family variables demonstrated a statistically significant total effect on depression. The disadvantage of using the BDI-Y instead of the K-SADS-IVR is that it eliminates the inclusion of a diagnostic interview. That is somewhat unfortunate, because diagnostic interviews are rare occurrences in studies such as this. Regardless of why the family and parental variables did not affect the K-SADS-IVR depression score as much as was anticipated, the fact that the independent variables significantly affected cognitive vulnerability to depression ultimately implies an indirect effect on depression and supports the cognitive triad as the appropriate mediating variable in this model.

Exploratory Analysis 3 delved deeper into the effects of the mediating variable by examining the independent effects of the three belief domains of the cognitive triad. Results indicated that daughter's beliefs about the self and the future both significantly affected the severity of depressive symptoms, while their beliefs about the world did not. These results are more powerful because they demonstrate the effect of each subscale of the CTI-C, while controlling for the effect of the other two subscales.

Beliefs about the self had the strongest effect on severity of depressive symptoms. Accordingly, a daughter's beliefs about herself may be most related to her experiencing depressive symptoms. It appears logical that a pre-adolescent girl who possesses negative beliefs about herself would be at increased risk for depression. In fact, negative self-esteem is a symptom of depression in youth. The finding that daughter's beliefs about the future significantly predict her depressive symptom severity also makes sense. This belief domain seems related to the concept of hopelessness, which is also a symptom of depression. The interesting finding is that beliefs about the world did not appear to be related to depressive symptoms. Are beliefs about the world important in this model, or are the true mediating variables really beliefs about the self and future?

Exploratory Analysis 4, which is reviewed subsequently in this discussion, provided some additional answers to these questions. When you explore the individual influence of each belief domain, while controlling for the influence of the other two, you find a definite distinction in effects. Beliefs about the self have the most powerful effect followed by beliefs about the future. Beliefs about the world do not have a statistically significant effect in this scenario. However, when you examine the influence of each of the domains on depressive symptoms without accounting for the other two, they all have a relatively equal effect. Perhaps the best inference is that all three beliefs are important individually. But when one considers the entire cognitive triad, it is preferable to conceptualize it in its individual belief domains. Of the three beliefs, those about the self seem to have the most relevance to this model and serve as the strongest predictor of daughter's severity of depressive symptoms.

The hypothesis that maternal depression would affect daughter's cognitive triad and daughter's depressive symptoms was not supported by this investigation. In none of the regression analyses did maternal depression demonstrate a significant effect on either dependent variable. This finding was surprising due to the large amount of research supporting the relationship between maternal and child depression (Beardslee et al, 1998; Gordon et al, 1989; Hammen et al, 1990; Hammen & Brennan, 2001; Warner et al,1992; Weissman et al, 1997) . So why did this investigation fail to replicate a finding that has been widely accepted within the literature?

One thing to keep in mind is that maternal depression was reported by mothers while the majority of variables were reported by daughters. This distinction may be an important one, since neither of the measures completed by the parents in this investigation (SCL-90-R, CTI) demonstrated a significant effect on daughter's cognitive triad or severity of depressive symptoms. There were 165 child participants, but only 126 mothers participated in completing the measures assessing depression (SCL-90-R) and cognitive triad (CTI). Moreover, all of the parents who did not participate were part of the depressed sample, not from the non-depressed control sample. There is a concern of underreporting of symptoms and bias due to missing parent participants in the depressed sample.

Initial analyses demonstrated that there were not mean differences in the relevant variables for daughters whose mothers participated versus daughters whose mothers did not complete the measures. However, it is possible that the parents who did not participate are not indicative of a random sample, but rather may have some similarities that effectively biased the participating sample. Perhaps on average these non-

participating parents had higher levels of psychopathology or more negative beliefs about the self, world, and future. These are just hypotheses, but something to keep in mind while interpreting these results.

Moreover, no mean group differences were found for the SCL-90R between parents in the depressed group and parents in the non-depressed control group. This was an unexpected finding that may imply that parents in the depressed group underreported their symptoms. There are some logical possibilities as to why parents in the depressed group may have underreported symptoms whereas parents in the control group might have been more honest. The likeliest one is that parents in the depressed group had already received feedback that their daughters were experiencing depression and therefore may have felt more defensive. The collection procedures were also different between the two groups, with the procedure in the depressed group being more drawn out, requiring more time, and entailing more contact with project personnel.

Another thought was that perhaps mothers in general underreported their depressive symptoms. To explore this question, the means of this sample were compared with the national norms from the SCL-90-R. It was found that the mean score is comparable with a *t*-score of 59 in a sample of non-patient adult females. However, it is also likely that some of the parents in this sample are receiving psychological services. Therefore, the current sample was also compared to the norms for female psychiatric outpatients. It was found that the mean score is comparable with a *t*-score of 39 in a sample of adult females receiving outpatient services. In summary, the current sample reported approximately a standard deviation more depressive symptoms than the average adult female not receiving psychological services and a standard deviation less symptoms

than the average adult females receiving outpatient psychological services. Accordingly, norm comparisons appear to indicate that the overall sample did not drastically underreport their depressive symptoms. The sample reported at least as many depressive symptoms as the average adult female.

Limitations aside, there are other possible explanations for why this strongly pre-established relationship between maternal and child depression was not replicated. Perhaps, the best conclusion to draw from the results is that this relationship is better accounted for by the other variables in the model. This study was not designed to study the biological or genetic predisposition to depression in daughters, but instead it explored the environmental influence of having a parent with depressive symptoms. However, having a parent with depressive symptoms might serve to foster a more negative family environment (i.e. more conflict, less social/recreational activity). Or, a depressed parent may communicate more negative messages about the self, world, and future to their daughters. This interpretation does not discredit the relationship between maternal and child depression, but rather pinpoints the mechanisms through which maternal depression may be influential.

Results supported the hypothesis that family environment variables would significantly predict daughter's cognitive triad. Specifically, greater family conflict and less family social/recreational activity were associated with a more negative cognitive style in daughters. In other words, this study suggests that family environments with high conflict and low social/recreational activity place daughters at greater risk for developing a cognitive vulnerability to depression. Although the family environment scales should be interpreted with some caution due to the relatively high amount of intercorrelation

among the subscales, these findings suggest that family environment is an important variable in shaping how a young girl interprets the stimuli around her.

The original analyses, which utilized the K-SADS-IVR interview as the measure of depressive symptoms, found that some family environment variables did have a statistically significant, though relatively small, indirect effect on severity of daughter's depressive symptoms. Moreover, when the time gap between measures was eliminated and the BDI-Y was substituted for the K-SADS-IVR as the measure of depression, family conflict and social/recreational orientation both demonstrated significant indirect and total effects on severity of depressive symptoms. Thus, not only were these family environment variables found to influence daughter's vulnerability to depression, but they were also found to be related to actual depressive symptoms. This finding is consistent with the original hypothesized model of depression.

Because the family environment variables did show significant intercorrelation among subscales, the following section will extrapolate on the interpretation of each finding. The questions from the Social/Recreational Orientation subscale tap into the daughter's sense of fun that she experiences with her family. It reads as an inventory of recreational activities completed together as a family, as well as an assessment of the comfort level the family has in socially engaging with other people. Results from the larger intervention study have found that teaching children to use coping skills is a very effective technique in working with depressed children. In a sense, a family who places priority on participating in recreational activities together demonstrates a coping skill model that may tremendously aid the daughter when she encounters negative life events.

However, the Social/Recreational Orientation subscale also taps into the daughter's beliefs about the communication and cohesion within her family. This is evidenced by the correlation between the Social/Recreational Orientation and Communication subscales ($r = .662$, $p \leq .001$) and the correlation between Social/Recreational Orientation and the Cohesion subscales ($r = .707$, $p \leq .001$). Perhaps a daughter's opinion about the fun that her family has together is also indicative of the sense of togetherness that she feels with her family. In many ways, this seems developmentally appropriate for a pre-adolescent girl. If she believes that she and her family can have fun together, then she may also view them as close. But perhaps it does not matter if the Social/Recreational Orientation subscale is truly assessing just the social functioning of the family or the combination of recreation, communication, and cohesion of the family. Ultimately, how a daughter perceives her recreational interactions with her family is related to her beliefs about the self, world, and future.

The importance of a family's social/recreational orientation appears to be further highlighted within the exploratory analyses. The models in Exploratory Analysis 4 demonstrate that a family's social/recreational activity has a significant effect on each respective subscale of the CTI-C. In fact, social/recreational orientation was found to be consistently related to cognitive vulnerability to depression throughout the entire investigation. Overall, results strongly support the conclusion that daughters who view their families as engaging in recreational and fun activities are less likely to demonstrate cognitive vulnerability to depression or depressive symptoms.

Of all the subscales on the SRMFF-CR, Conflict was found to have the least intercorrelation with other variables. This seems to be a fairly unique family

environment construct that also affects daughter's vulnerability to depression and depressive symptomology. The questions from the Conflict scale assess overt family aggression and conflict.

It should be noted that in exploratory analysis 4, family conflict was not found to be related with any of the subscales of the CTI-C. But because family conflict demonstrated similar effects within the original exploratory analyses, it seems as though the lack of significance may be more due to the decrease in power from adding variables than a change in effect. Moreover, family conflict did not have as strong an effect on daughter's cognitive triad as the Social/Recreational Orientation subscale within any analysis. Thus, family conflict may not be as strong a predictor of depressive symptomology as family social/recreational orientation. However, higher levels of overt conflict within the home have a unique effect on cognitive vulnerability and depressive symptoms in daughters.

Although the Cohesion subscale did not demonstrate a significant effect on the dependent variables, this does not imply that family togetherness is not an important variable to consider. As alluded to above, Cohesion correlated highly with the Social/Recreational Orientation subscale ($r = .707$). Furthermore, it also correlated highly with the Communication ($r = .698$, $p \leq .001$) and the Conflict subscales ($r = -.573$, $p \leq .001$). Of all the family environment subscales, the Cohesion domain was clearly the most intercorrelated. It is very possible that the togetherness of a family is very important in conceptualizing the etiology of depression, but the construct was better accounted for in the Social/Recreational Orientation and Conflict subscales. A summary of the results of this study regarding the influence of family environment might read as

follows. A girl whose family completes fun activities together and is not in conflict is at a lower risk for depressive cognitions. In looking at that summary, it seems contradictory to say that cohesion is not an important factor.

Family communication was not statistically associated with cognitive vulnerability to depression, although the regression coefficients neared significance. Some caution should be taken in interpreting the results regarding the Communication subscale. First, this subscale was also highly correlated with the Social/Recreational Orientation ($r$ = .710) and Cohesion subscales ($r$ = .675) of the SRMFF-CR. Second, parental messages about the self, world, and future encompass a means of family communication that were found to significantly influence this model. Lastly, an examination of item content indicates that most items of the Communication subscale measure the extent to which children are involved in the decision making process in the family. Generally, it is not developmentally appropriate for families to include younger children and adolescents in family decision making. The subscale also includes two items about the discussion of personal problems between family members, which were originally on the expressiveness scale of the SRMFF. The excessive sharing of emotional content between parents and children is also not developmentally appropriate. Thus, these results should be interpreted with caution, as it is unclear whether the type of communication measured in this study is consistent with other studies with this age group.

Results did not confirm the modeling hypothesis as a significant predictor of daughter's cognitive style. Mother's cognitive style did not have a significant direct effect on daughter's cognitive style, nor did it show any statistical effect on daughter's

depressive symptoms. Previous studies that found support of the modeling hypothesis have not typically controlled for the influences of family environment and parental messages. When these other variables are taken into account, parents' actual beliefs about the self, world, and future were not found to be significantly related to daughter's cognitive vulnerability to depression.

It should be noted that the parents' cognitive triad was one of the constructs completed by parents. Accordingly, the same limitations exist for this construct that were addressed with regard to maternal depression. No mean group differences were found for the CTI between parents in the depressed group and parents in the non-depressed control group. Again, this finding may imply that parents from the depressed group reported positively skewed answers about their cognitive triad.

However, other factors support the legitimacy of this null finding. One of those factors is the lack of intercorrelation between the CTI and other independent measures. It appears as though the CTI measured something totally different than family environment and perceived parental messages. Furthermore, the CTI showed a significant correlation with parental depression ($r = .570$, $p \leq .001$). This was an expected finding that somewhat corroborates the legitimacy of both measures. In summary, results suggest that parents contribute to the development of daughter's cognitive triad through paths other than the modeling of their own cognitive triad.

One of those significant paths was the messages communicated to daughters about the self, world, and future. This study found that perceived negative parental messages about the cognitive triad significantly predicted daughter's cognitive triad and had an indirect effect on daughter's K-SADS-IVR score. This is an important finding

that implicates parent's inferential feedback as a key factor in the presence of daughter's vulnerability to depressive symptoms.

The exploratory analyses provided a more in-depth understanding of the results regarding parental inferential feedback. Exploratory analysis 1 examined the independent effect of messages from fathers versus messages from mother. Results indicated that perceived messages from both the mother and the father had a significant effect on daughter's beliefs about the self, world, and future, even while controlling for messages from the other parent. However, when messages from both parents were accounted for, messages from mothers had a stronger effect on daughter's cognitive triad than messages from fathers. This finding implies that mothers have a greater influence than fathers on daughter's beliefs regarding the self, world, and future, which are strongly correlated with severity of depressive symptoms. In fact, due to its stronger influence on daughter's cognitive triad, perceived maternal messages demonstrated a significant total effect on severity of daughter's depressive symptoms, while perceived paternal messages did not.

So that provides some information about which parental messages have the greater effect on daughter's cognitive vulnerability to depression. But it is difficult to determine whether perceived messages from mothers or the most negative messages from either parent are the better predictor of daughter's cognitive style. The secondary analysis is the most comparable set of regressions to Exploratory Analysis 1, since both use the BDI-Y as the dependent measure of depressive symptoms. From the secondary analysis, we see that the most negative perceived messages (from either parent) have an effect of $\beta = .293$ on daughter's cognitive style. Although these regression coefficients are not statistically comparable (since they are borne from different regression analyses),

that effect is very close to that of perceived messages only from mothers (β = .293). It is relevant to note that the more negative messages variable was comprised of perceived messages from 89 fathers and 75 mothers. Thus, the more negative messages variable is not particularly representative of one parent over another. The best inference to make is that the most negative messages from either parent has about the same influence on daughter's beliefs about the self, world, and future as perceived messages only from mothers. If this hypothesis was confirmed in future research, it would be an interesting finding that highlights the added importance of messages that daughters receive specifically from mothers about the self, world, and future.

An area that was not accounted for regarding parental messages is the possibility of interaction effects. Perhaps receiving negative messages from two parents has a more powerful effect on daughter's cognitive triad. Or perhaps receiving positive messages from one parent serves as a protective factor against negative messages from another parent? This study did not control for the interaction of receiving different messages from multiple parents and how this might alter the formation of the cognitive triad. Similarly, this investigation did not control for the relationship between parents and daughters. It seems possible that the messages a daughter receives from a parent she is close to might have a stronger impact on the development of her own beliefs. Similarly, messages received from a parent who a girl is presently residing with may also have a greater influence. Future research is needed to explore the variables that may heighten or lessen the impact of perceived parental messages about the self, world, and future.

Exploratory Analysis 2 explored the effects of the three different types of perceived parental messages. Accordingly, these analyses delved into the question of

whether perceived parental messages about the self, world, and future had unique effects on daughter's cognitive vulnerability to depression and severity of depressive symptoms. Interestingly, while controlling for the effect of the other variables, none of the FMM subscales demonstrated a significant direct effect on daughter's cognitive triad. In other words, none of the messages (perceived messages about the self, perceived messages about the world, or perceived messages about the future) independently affected daughter's total cognitive triad. This finding suggests that conceptualizing messages about the cognitive triad as one construct, as opposed to specific belief domains, is more relevant to daughter's overall cognitive triad and is a better fit with this model.

There are several factors to keep in mind when considering this conclusion. First, though all three FMM subscales demonstrated acceptable internal reliability, the total FMM is a longer scale with higher reliability. Since reliability is a large factor in regression analyses, it makes sense that the total FMM would be a better predictor of daughter's cognitive triad. Secondly, daughter's cognitive triad was assessed as one construct and not broken down into its subscales (see Exploratory Analysis 4), so it also makes sense that the composite FMM score would correlate highest with the composite CTI-C score. Thirdly, by simultaneously entering all three variables of the FMM into the model, the power of the regression analyses was effectively decreased. If the sample size was increased, it is likely that perceived parental messages about the future would demonstrate a statistically significant effect on daughter's cognitive triad.

Results of Exploratory Analysis 2 also demonstrated that although messages about the future did not have a significant direct effect on daughter's cognitive triad, they did have a significant total effect on daughter's severity of depressive symptoms. Thus,

the combination of the direct effect and indirect effect (via daughter's cognitive triad) significantly affected daughter's severity of depressive symptoms. Moreover, perceived messages about the future was the only subscale that was even close to demonstrating a significant effect on daughter's cognitive triad. These findings seem to suggest that of the three types of messages, perceived parental messages about the future were the most related to a daughter's severity of depressive symptoms.

Ultimately, more research needs to be completed to analyze the specific effect of parental messages about the future. The finding that messages about the future are more powerful than messages about the self and world is an interesting one with notable implications. If true, what might it be about parental messages about the future that makes it a more powerful predictor of daughter's cognitive triad and depressive symptoms? Could it be these messages have a greater effect due to the finality and hopelessness associated with them? These are questions that need to be explored in future studies.

The purpose of Exploratory Analysis 4 was to examine which parental and family variables, and specifically which type of perceived parental messages, correlated with each belief domain of the CTI-C. Accordingly, these analyses provided a complete path model of depression with each belief domain of the cognitive triad. This discussion will review each model one by one and review the implications.

First, let us examine the model with daughter's beliefs about the self entered as the mediating variable (see Figure 7). Results from these analyses were surprising in that perceived parental messages about the self did not have a significant effect on daughter's beliefs about the self. In fact, none of the perceived parental messages about the self,

world, or future demonstrated a significant effect. Only a family's social/recreational orientation was correlated with daughter's beliefs about the self. The previous exploratory analysis found that daughter's beliefs about the self are the most related to severity of depressive symptoms. So, these analyses failed to explain much of the variance in perhaps the most relevant of belief domains. In other words, this model did not shed much light on what really affects the beliefs that a pre-adolescent girl holds about herself. One possibility is that peers have a strong influence in this domain. There is an increase in the importance of peer relationships during this developmental period (Rudolph & Hammen, 1999; Rudolph et al., 2000) and that factor is not accounted for in this model. Perhaps peer interactions have a particularly strong effect on a pre-adolescent girl's beliefs about self. Future research is needed to further explore the variables that are most associated with pre-adolescents' beliefs about the self, as those beliefs are strongly related to depressive symptoms.

Another interesting finding was that perceived parental messages about the future directly affected daughter's depressive symptom severity. This further implies the importance of parental messages about the future in this model. It also seems to imply that daughter's beliefs about the self are not the appropriate mediating variable for the effect of perceived parental messages about the future on depressive symptom severity.

Now let us examine the model with daughter's beliefs about the world as the mediating variable (see Figure 8). An interesting finding is the powerful effect that daughter's beliefs about the world have on severity of depressive symptoms. In fact, this effect seems about equivalent to the effect that daughter's beliefs about the future (see Figure 9) and daughter's beliefs about the self (see Figure 7) have on daughter's

depressive symptom severity. Thus, when not controlling for the effect of the other two subscales of the cognitive triad, beliefs about the world have a very powerful influence on depressive symptom severity. Moreover, perceived parental messages about the world were found to be the only message domain that significantly affected daughter's beliefs about the world. This was an expected finding that may help explain how a daughter's belief system about the world is shaped.

Finally, refer to Figure 9 which demonstrates the model with daughter's beliefs about the future entered as the mediating variable. This model finds that perceived parental messages about the future significantly affect daughter's beliefs about the future. Again, this is a logical finding that may help explain how a daughter's beliefs about the future are formed.

*Summary of Main Findings*

Results indicated that daughter's cognitive triad is strongly related to the severity of her depressive symptoms, as assessed by a semi-structured diagnostic interview. Moreover, family conflict, family social/recreational orientation, and perceived parental messages about the cognitive triad were all shown to be related to daughter's beliefs about the self, world, and future. Results also indicated that family conflict, family social/recreational orientation, and perceived parental messages indirectly affected the severity of daughter's depressive symptoms through the mediating variable of daughter's beliefs about the self, world, and future. While controlling for these variables, maternal depressive symptoms, maternal cognitive style, family cohesion, and family communication were not found to be related to daughter's cognitive triad or severity of depressive symptoms.

The exploratory analyses provided more in-depth understanding of the original hypotheses and highlighted hypotheses for future research. Results indicated that perceived messages from mothers are more powerful than perceived messages from fathers, and seemingly equally powerful as the most negative messages from either parent. Some results indicated that it is most effective to analyze the effect of perceived parental messages about the cognitive triad as one composite score as opposed to the specific messages about the self, world, and future. However, other findings demonstrated that messages about the future have the largest effect on daughter's depressive symptom severity and the most relevance with this overall model. More research is needed to explore these findings. Of the three beliefs comprising the cognitive triad, daughter's beliefs about the self were the most related to her severity of depressive symptoms. Unfortunately, the variables in this model were not very effective in explaining the variance in daughter's beliefs about the self. Future research is also needed in this specific area. Finally, the exploratory analyses confirmed the overall importance of social/recreational activity in a family, as that variable was found to be consistently related to daughter's beliefs and depressive symptoms.

*Integration with Previous Research*

This model exploring the family correlates of depression in pre-adolescent girls provided some interesting results that add to the existing literature on the topic. This investigation was based on research showing that family environment and relationships are extremely important influences on the etiology of depression in young girls (Compton et al., 2003; Gamble & Roberts, 2005; Hammen, 2000; Sheeber & Sorensen, 1998). The findings of this study corroborated this tenet, as parental and family variables were

related to severity of depressive symptoms. Moreover, this study elucidated some specific pathways from family environment to depression.

One of those pathways is through the daughter's cognitive style. Beck contends that people who possess negative schemas about the self, world, and future are at an increased vulnerability to becoming depressed when they experience negative life events (Beck, 1867/1972, 1987; Kovacs & Beck, 1978). All findings supported the cognitive triad as the mediating variable within the model and were consistent with Beck's theory of cognitive vulnerability to depression. This investigation did not use longitudinal data, and therefore could not make assertions regarding causation. However, previous research has established that depressogenic cognitions precede and serve as a vulnerability to actual depressive symptoms (Alloy et al, 2000; Abramson et al, 1999).

Accordingly, the main question that this investigation attempted to answer is which family variables are related to daughters developing depressogenic cognitive styles. There are many family correlates to childhood depression found in the literature, including: mother's depression (Hammen et al., 1990; Weissman et al., 1997), mother's negative cognitive style (Alloy et al., 2001; Garber & Flynn, 2001; Stark et al., 1996), less cohesion, less communication, less social/recreational activity (Barrera & Garrison-Jones, 1992; Jewell & Stark, 2003; Kaslow et al., 1998; Stark et al, 1990), increased conflict (Forehand, Brody, Long, & Fauber, 1988), and parent's negative inferential feedback (Alloy et al., 1998; Radke-Yarrow et al., 1990; Stark et al., 1996). Some of these family constructs have also been found to be related to children's depressogenic cognitions (mother's cognition, mother's cognitive style, and parent's inferential feedback, family conflict), while the relationship had not yet been researched with the

other variables (family cohesion, communication, and social/recreational orientation). Moreover, no studies have explored the unique influence of each of these variables, while controlling for the effects of the others. Thus, this experiment builds on existing research in the field by exploring a more comprehensive model of pathways to cognitive vulnerability to depression.

The finding that maternal depression was not related to girl's cognitive triad or levels of depression is a surprising result in light of the volume of previous research which found an increased rate of depression in children of depressed parents (Beardslee et al., 1998; Gordon et al., 1989; Hammen et al., 1990; Hammen & Brennan, 2001; Warner et al., 1992; Weissman et al., 1997). One factor to consider is that the existing literature on the relationship of parent psychopathology and depression in youth (e.g., Gordon et al., 1989; Hammen & Brennan, 2001) was based on diagnostic interviews with parents. Since depressive symptoms are relatively common, it is possible that a self-report measure of depression is insufficient to distinguish clinical and normal levels of depression for adults. Another thing to consider is that much of the literature is based on clinical samples of women already diagnosed with depression (e.g. Hammen et al., 1990; Warner et al., 1992). Fewer studies have looked at the symptomology of parents with depressed children. One study did find an increased rate of depression in family members of adolescents with depression (Klein, Lewinsohn, Rohde, Seeley, & Durbin, 2002); however, many of the family members were not directly interviewed and diagnosis was based on family history. Thus, most research on parent psychopathology is conducted by interviewing children of parents identified as depressed, rather than parents of children identified as depressed. The current study was based on a sample of children rather than

parents, and this difference may be an important one in terms of the results found. The literature may benefit from more research where children are recruited, rather than selecting a sample of depressed parents.

The third possibility is that maternal depression is not a strong predictor of daughter's cognitive style when controlling for the other variables in the model. Most of these previous studies have not controlled for the effects of family environment or parental messages. Moreover, several researchers have suggested that family variables such as conflict and cohesion, rather than parent psychopathology, are the mechanisms through which youth are at increased risk for depression (Beardslee et al., 1998; Brennan et al., 2002), and some researchers have begun to examine the relationships between parent psychopathology and interpersonal environments. Hammen and Brennan (2001) found that the family relationships of children of depressed mothers were more negative than children of non-depressed mothers. Perhaps this study demonstrates that the depressive symptoms parents experience are not as influential as the type of environment fostered.

Daughter's view of their family's social/recreational orientation was one of the most consistent predictors of daughter's cognitive style throughout the study. This was a new finding that suggests daughter's perception of social engagement with her family affects depression through the mediating variable of cognitive vulnerability. Moreover, the finding that engagement in fewer social/recreational activities was significantly associated with levels of depression in pre- and early adolescent girls, while controlling for the other family variables, was also an interesting one. Compared to other aspects of family environment, few studies have examined the influence of social/recreational

activity in families (Stark et al., 1990). These results suggest that social/recreational orientation, a relatively overlooked aspect of family environment in research with depressed youth, should be attended to more often in future studies. On the opposite end of the spectrum, the finding that family conflict is related to daughter's cognitive style replicates previous studies in the field (Gamble & Roberts, 2005; Garber et al, 1997).

The current study did not find a strong relationship between family communication or family cohesion and depression in girls. In some ways, these findings did not corroborate the previous results suggesting that poor communication (Puig-Antich et al., 1985).and lack of cohesion (Barrera & Garrison-Jones, 1992; Ostrander et al., 1998) are related to depression in youth. However, there are a couple of things to keep in mind when interpreting these results. It is possible that the Communication subscale did not appropriately assess communication style, as most of the items measured democratic decision making, which is not a developmentally appropriate style of parenting for this age group. Moreover, the Cohesion subscale highly correlated with the other subscales of family environment. It seems as though a daughter's sense of her family's cohesion may have been accounted for in the family Conflict and Social/Recreational Orientation subscales.

Another surprising null finding from this investigation was related to the modeling hypothesis. This study did not corroborate previous research that daughters learn their cognitive styles by modeling their mother's cognitive style (Abramson et al, 1999; Alloy et al., 1999; Garber & Flynn, 1998; Haines et al, 1999). However, none of these previous investigations controlled for the influence of parental messages about the

cognitive triad on daughter's cognitive style. It seems as though verbal messages may be a more powerful means by which a parent communicates his or her own cognitive triad.

The other consistent finding from this investigation was that daughter's perceptions of her parent's messages about the self, world, and future significantly influence her own schemas. Ample research has established the influence of verbal support and criticism on the psychopathology of offspring (Armsden et al., 1990; McFarlane et al., 1994; Sheeber & Sorensen, 1998)). However, fewer studies have explored how those variables affect the information processing of offspring. This study suggests that parental messages actually influence daughter's cognitive triad, which places them at greater risk for developing psychopathology. This does corroborate results found in some studies (Alloy et al, 1998; Jacquez et al, 2004; Stark et al., 1996). However, this investigation spotlights the relative importance of parental messages by entering them into a model with other correlates of depression. Perceived parental messages about the self, world, and future seem to be a more powerful predictor of schemas and depressive symptoms in youth than is established within the literature. Accordingly, subsequent investigation of this domain is called for.

Specifically, the exploratory analyses suggested that mother's messages had a stronger influence on daughter's cognitive triad than father's messages. This finding was contradictory to the research suggesting fathers have a particularly powerful influence through this medium (Garber and Flynn, 2001; Stark et al., 1996). Perhaps controlling for the closeness of the relationship (i.e. single-mother, step-father, etc.) and the amount of time that parents spend with their children would help to clear up this debate. Regardless, it seems as though parental messages from both parents are significantly

related to daughter's cognitive triad. The finding that messages about the future are most related to daughter's severity of depressive symptoms is a new one, because no previous studies have explored the unique effect of different types of messages on the presence of negative beliefs about the self, world, and future.

Overall, research has consistently shown that children raised in households characterized as low in warmth (Whisman & Kwon, 1992) and high in criticism (Gamble & Roberts, 2005) tend to develop more depressogenic cognitive styles, which place them at a greater vulnerability to depression (Abramson et al, 1989; Alloy et al., 1999; Beck, 1987). This study corroborates this contention, but delved deeper into the specific mechanisms that characterize this type of environment.

*Limitations*

A number of limitations in the current study should be taken into account. First, the current investigation is specific to a sample of pre- and early adolescent girls. Therefore, conclusions can only be made with respect to girls and do not allow for a discussion of gender differences. However, the purpose of the current study was to examine gender-specific pathways to depression because of the gender differences in prevalence of and vulnerability to depression. A unique strength of this study was the opportunity to study cognitive and family correlates of depression in a large sample of girls.

A second limitation is the lack of full parent participation, specifically in the group of depressed girls. While most all of the mothers of control participants completed the SCL-90-R and CTI, only 66 percent of the mothers of depressed participants completed the measures. This difference in parent completion of the SCL-90-R was

likely due to a difference in data collection across groups. In the first year of data collection for the depressed group, parent measures were sent home rather than completed in person. During this year of the study, parent participation was particularly low. Data from the control group, however, was collected in families' homes, in order to more efficiently collect data and reduce the amount of time the participants were removed from school. Accordingly, results regarding the effects of parent cognitive triad and parental depression should be interpreted with more caution than the others. Another limitation with respect to the parent data is that parents were not asked whether they were currently being treated for depression with medication or therapy. It is possible that some of the mothers were depressed, but were being treated, resulting in a report of less severe symptoms of depression.

Another limitation of the current study is the reliance on self-report measures to assess family environment. Although the finding that negative family environments is associated with depression in adolescents is strongly supported in the literature, some research suggests that depressed children and adolescents may report more negative environments due to cognitive distortion. In a study comparing depressed, externalizing, and non-clinical adolescents, self-report and observational findings did not concur with each other (Pavlidis & McCauley, 2001). Depressed adolescents reported poor quality of relationships with their mothers, while observational results did not indicate that depressed adolescents or their mothers differed from the other groups in terms of their behavior. Other studies have also found low concordance between child and parent reports of family characteristics (e.g. Puig-Antich, Kaufman, Ryan, Williamson, Dahl,

Lukens, et al., 1993). Thus, a potential problem of self-report is that pessimistic children are likely to negatively view their family environment.

The current study is based on cross-sectional data, and therefore causal inferences should be made with some caution. Longitudinal data might delineate the causal pathways between family variables, cognitive styles, and depression. Additional research is needed to test whether environmental factors and parental messages lead to more negative cognitive styles over time. Accordingly, an ideal study would measure family variables when the child was young, continue to measure family variables over different developmental periods, and measure cognitive styles when the child nears adolescence. This investigation explored the family and parental correlates of a negative cognitive style in daughters, but could not make strong assertions about the causes of daughter's beliefs.

Another limitation is that this model of depression did not specifically account for the interaction between cognitive styles and stress that is theorized to precipitate depression. Thus, additional research is needed to look at depression over time with respect to the interaction between cognitive style and negative events. Future studies could measure depression and cognitive style at time one and then negative life events and depression at time two. This method would help to delineate the pathways leading to increases in depressive symptoms. These methods would allow for the researcher to draw more conclusions regarding the etiology of depression in relationship to cognitive styles and life stressors.

Comorbidity was also not taken into account in the analyses. The majority of the sample had more than one diagnosis, with a large percent endorsing comorbid anxiety.

Future research is needed to explore the specific pathways to depression in relationship to other symptomology. The current study is limited to exploring the pathways of depressive symptoms only.

This investigation explored the effects of parental and family variables, but failed to account for many other relevant correlates of depression. For instance, measures of peer interactions and messages might be strong factors in predicting cognitive triad and depressive symptoms in pre-adolescents. It should be noted that this investigation only explored the effect that families have on depression in daughters. Though that was the purpose of the study, it served to limit the scope of the model.

### *Implications*

Despite limitations, the results of the current study have important implications. First, this investigation clearly shows a high correlation between negative beliefs and depressive symptom severity. This finding has implications for treatment. Therapy that targets maladaptive beliefs and distortions in thinking, such as cognitive behavioral therapy, may be an effective modality when working with pre-adolescent girls. Focusing on these constructs in treatment may prove beneficial in lessening depressive symptoms, as well as lessening the vulnerability for future depressive episodes. Moreover, it may be particularly important to focus on young girls' automatic thoughts related to herself and her future.

This investigation also seems to particularly highlight the importance of family and familial interactions in the conceptualization of depression in pre-adolescent girls. Accordingly, it is important to include families in the treatment of these girls. If the

family environment is a predictor of daughter's cognitive triad, then working to adapt a negative environment seems like a logical goal for treatment.

Specifically, results showed that a family's social/recreational orientation was a powerful correlate to cognitive vulnerability and severity of depressive symptoms in daughters. This has some very practical implications. Teaching children coping skills has been found to be a powerful skill in minimizing depressive symptoms. Perhaps expanding this to a family level is also important. Given the strong relationship found, it is probable that increasing social/recreational activity in families will be associated with a more positive cognitive style in daughters. Further, it is possible that increasing social/recreational activity in families will also improve family environments and relationships between family members. Scheduling family activities may be important in treating depressed youths, and future research should explore the efficacy of this technique in treatment.

Similarly, results imply that helping families manage and reduce conflict should be another focus of treatment. Specifically, clinicians should focus on minimizing overt conflict and aggression in the household. This is a common goal for family therapists, but these results place increased import on its relevance to internalizing disorders in children.

Results also indicated that perceived parental messages are strongly related to daughter's cognitive vulnerability to depression. Accordingly, working with parents to monitor the messages they supply daughters could serve to protect against or alter maladapative beliefs. Encouraging parents to provide positive and supportive messages to daughters should be a focal point in working with this population. It may be

particularly important that parents provide positive messages about their child's future and refrain from communicating a sense of hopelessness.

These implications have focused on the treatment of depression in pre-adolescent girls, but results from this study may be even more applicable to the prevention of depression. If parents are aware of the family variables that might lead to negative cognitive styles, then they may be able to foster a family environment that protects against the development of negative beliefs about the self, world, and future. Family environment may have a particularly powerful influence in late childhood, while the child's schematic representation of themselves in relation to the world is being shaped. Minimizing conflict, maximizing social activities, and providing positive, hopeful messages to children may have a strong impact on how daughters interpret their world, and subsequently diminish their future vulnerability to depression. These results replicate the findings in the literature, noting the importance of providing a supportive, non-critical environment. But these results divide this broader finding into smaller, more practical, constructs.

Finally, the non-significant pathways to depression in this model raise some theoretical questions and spark opportunities for future research. The fact that this investigation did not find an association between maternal depression and depression in daughters was surprising due to the robust relationship found in the literature. Likewise, the lack of support for the modeling hypothesis calls into question this mode of transmitting cognitive styles across generations. More research is needed to evaluate these findings.

*Conclusions*

The current study, exploring family correlates of depression and cognitive vulnerability to depression in pre- and early adolescent girls, procured some significant results. The most powerful finding was that daughter's cognitive triad is associated with severity of daughter's depressive symptoms. Moreover, exploratory analyses found that beliefs specifically about the self, and to a somewhat lesser degree the future, are strongly related to depressive symptoms. These findings support Beck's theory of cognitive vulnerability to depression and emphasize the importance of cognition in conceptualizing depression in female youth.

Some family and parental variables included in this model were shown to be related to daughter's cognitive triad. Specifically, family conflict, family social/recreational orientation, and perceived parental messages about the self, world, and future significantly affected daughter's beliefs. Moreover, family environment and perceived parental messages significantly affected severity of daughter's depressive symptoms through the mediating variable of daughter's cognitive style. This finding is important because it demonstrates the means through which family environment influences daughter's depression. Family variables affect daughter's beliefs, which then affect depressive symptoms. This finding holds up when depression was assessed via a semi-structured diagnostic interview. These are important results with strong implications for treatment.

Some caution should be exercised in interpreting the effects of specific family environment constructs on this model. Many of the subscales of family environment were strongly intercorrelated, which made interpretations more difficult. For instance,

the Cohesion subscale was strongly correlated with the Communication, Social/Recreational Orientation, and Conflict subscales. Thus, although Cohesion did not demonstrate a unique effect on daughter's beliefs or depressive symptoms, it is difficult to rule out its importance in the model. Similarly, family communication did not demonstrate a significant influence. But due to intercorrelations and some questions about the developmental appropriateness of the Communication construct assessed, conclusions were difficult to reach. The Social/Recreational Orientation construct demonstrated a strong and consistent effect on daughter's cognitive style throughout the investigation. The Conflict subscale also demonstrated a significant effect. In summary, daughters who perceived their families as participating in fun activities together and engaging in less overt conflict endorsed a more positive cognitive style and less depressive symptoms.

Perceived parental messages about the cognitive triad were also found to be a strong and consistent predicator of daughter's cognitive style across analyses. The messages that parents provide to their daughters about the self, world, and future directly affect daughter's cognitive style and indirectly affected daughter's severity of depressive symptoms. Exploratory analyses provided more insight into these findings and produced some hypotheses for future study. Specifically, results implied that mother's messages may be a more powerful predictor of daughter's cognitive style than messages from fathers. Moreover, it appears preferable to conceptualize parental messages as one construct as opposed to isolating messages about the self, world, and future. However, of the three types of messages, those about the future appeared to have the strongest effect

on daughter's cognitive triad and severity of depressive symptoms. These findings are in need of replicating research.

Exploratory analyses also provided some initial insight into which family variables affected each belief of the cognitive triad. Parental messages about the future significantly predicted daughter's beliefs about the future, and messages about the world significantly predicted beliefs about the world. Surprisingly, parental messages about the self did not significantly predict daughter's beliefs about the self. Future research is needed to understand more about the etiology of beliefs about the self, particularly since these beliefs were found to be the most strongly related to depression.

Results also implicated that maternal depression was not significantly associated with daughter's cognitive triad or daughter's depressive symptoms, while controlling for the influence of the other variables. Similarly, the modeling hypothesis was not corroborated as a means by which daughters learn their cognitive triad. In other words, mother's cognitive triad did not correlate with daughter's cognitive triad. Both of these null findings were surprising and contradictory to the literature in the field. More research is needed to confirm these findings.

Hopefully, this study has contributed to the growing body of literature exploring the relationship among families, cognitions, and depression. This investigation particularly highlighted the importance of depressogenic cognitions and the influence of families in shaping the beliefs of female youths. Ideally, this research will spark future studies that continue to explore the etiology of depression in pre- and early adolescent girls. Depression is a serious malady that markedly afflicts adolescent girls and warrants continued exploration.

**Appendix A**

*Intercorrelations for Scales*

| | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. K-SADS | | .521 | .078 | .494 | .007 | -.224 | .112 | -.183 | -.264 | .270 |
| 2. BDI-Y | | | .048 | .794 | -.022 | -.380 | .355 | -.435 | -.449 | .457 |
| 3. SCL-90-R | | | | .040 | .572 | -.015 | .100 | -.069 | -.095 | .073 |
| 4. CTI-C | | | | | .004 | -.505 | .370 | -.487 | -.522 | .537 |
| 5. CTI | | | | | | .054 | .039 | .007 | -.039 | -.015 |
| 6. Comm. | | | | | | | -.298 | .710 | .675 | -.533 |
| 7. Conflict | | | | | | | | -.525 | -.264 | .394 |
| 8. Cohesion | | | | | | | | | .713 | -.624 |
| 9. Soc/Rec | | | | | | | | | | -.519 |
| 10. FMM | | | | | | | | | | |

**Appendix B**

*DSM-IVR Criteria for Major Depressive Disorder and Major Depressive Episode*

DSM-IVR Criteria for Major Depressive Disorder

A. Presence of one or more Major Depressive Episodes (to be considered separate episodes, there must be an interval of two consecutive months in which criteria are not met for a Major Depressive Episode).
B. Major Depressive Episode is not better accounted for by Schizoaffective Disorder and is not superimposed on Schizophrenia, Schizophreniform Disorder, Delusional Disorder, or Psychotic Disorder Not Otherwise Specified.
C. There has never been a Manic Episode, Mixed Episode, or Hypomanic Episode.

DSM-IVR Criteria for Major Depressive Episode

A. Five (or more) of the following symptoms must be present during the same two-week period and represent a change from previous functioning; at least one of the symptoms is either (1) depressed mood, or (2) loss of interest or pleasure.
    1. Depressed mood most of the day, nearly every day, as indicated by either subjective report (e.g., feels sad or empty) or observation made by others (e.g., appears tearful). **Note: in children and adolescents, can be irritable mood**.
    2. Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective account or observation made by others).
    3. Significant weight loss when not dieting or weight gain (e.g., a change of more than 5% of body weight in a month), or decrease or increase in appetite nearly every day. **Note: in children, consider failure to make expected weight gains**.
    4. Insomnia or hypersomnia nearly every day.
    5. Psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down).
    6. Fatigue or loss of energy nearly every day.
    7. Feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick).
    8. Diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others).
    9. Recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide.
B. The symptoms do not meet criteria for a Mixed Episode.
C. The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

D. The symptoms are not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition (e.g., hypothyroidism).
E. The symptoms are not better accounted for by Bereavement, i.e., after the loss of a loved one, the symptoms persist for longer than two months or are characterized by marked functional impairment, morbid preoccupation with worthlessness, suicidal ideation, psychotic symptoms, or psychomotor retardation.

**Appendix C**

*DSM-IVR Criteria for Dysthymic Disorder*

DSM-IVR Criteria for Dysthymic Disorder

A. Depressed mood for most of the day, for more days than not, as indicated either by subjective account of observation by others, for at least two years. **Note: In children and adolescents, mood can be irritable and duration must be at least one year.**
B. Presence, while depressed, of two (or more) of the following:
    1. Poor appetite or overeating
    2. Insomnia or hypersomnia
    3. Low energy or fatigue
    4. Low self-esteem
    5. Poor concentration or difficulty making decisions
    6. Feelings of hopelessness
C. During the two-year period (one year for children or adolescents) of the disturbance, the person has never been without the symptoms in Criteria A and B for more than two months at a time.
D. No Major Depressive Episode has been present during the first two years of the disturbance.
E. There has never been a Manic Episode, a Mixed Episode, or a Hypomanic Episode, and criteria have never been met for Cyclothymic Disorder.
F. The disturbance does not occur exclusively during the course of a chronic Psychotic Disorder, such as Schizophrenia or Delusional Disorder.
G. The symptoms are not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition (e.g., hypothyroidism).
H. The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

**Appendix D**

*DSM-IVR Criteria for Depressive Disorder Not Otherwise Specified*

DSM-IVR Criteria for Depressive Disorder Not Otherwise Specified

A. A mood disturbance, defined as follows:
    1. At least two (but less than five) of the following symptoms have been present during the same two-week period and represent a change from previous functioning; at least one of the symptoms is either (a) or (b):
        a. Depressed mood most of the day, nearly every day, as indicated by either subjective report (e.g., feels sad or empty) or observation made by others (e.g., appears tearful). **Note: in children and adolescents, can be irritable mood**.
        b. Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective account or observation made by others).
        c. Significant weight loss when not dieting or weight gain (e.g., a change of more than 5% of body weight in a month), or decrease or increase in appetite nearly every day. **Note: in children, consider failure to make expected weight gains**.
        d. Insomnia or hypersomnia nearly every day.
        e. Psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down).
        f. Fatigue or loss of energy nearly every day.
        g. Feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick).
        h. Diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others).
        i. Recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide.
    2. The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.
    3. The symptoms are not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition (e.g., hypothyroidism).
    4. The symptoms are not better accounted for by Bereavement.
B. There has never been a Major Depressive Episode, and criteria are not met for Dysthymic Disorder.
C. There has never been a Manic Episode, a Mixed Episode, or a Hypomanic Episode, and criteria are not met for Cyclothymic Disorder.

D. The mood disturbance does not occur exclusively during Schizophrenia, Schizophreniform Disorder, Schizoaffective Disorder, Delusional Disorder, or Psychotic Disorder Not Otherwise Specified.

## Appendix E

*Letters to Parents, Parental Consent Forms, and Student Assent Forms*

Parent Consent Letter and Form for Screening (Depressed Group)

Dear Parent,

[insert name of school here]is teaming up with Kevin Stark, Ph.D. from the University of Texas to evaluate a coping skills training program for girls called ACTION. The ACTION program is designed to teach girls how to manage their emotions and stress, solve problems, and think more positively about themselves. While we believe that all students could benefit from this program, currently, only girls who are experiencing high levels of distress will be able to participate. We are asking for permission from all parents of girls in grades [insert grade numbers of school here] for their daughters to participate in a screening that will help identify girls who are experiencing distress. Girls who participate in the screening will fill out a questionnaire that takes approximately 10 minutes to complete. Doctoral psychology students with appropriate training will supervise the completion of the questionnaires. At this time we do not anticipate any discomfort in completing the ACTION questionnaire.

Girls who report having more than a typical number symptoms of distress will be interviewed about specific symptoms of depression to determine if they are experiencing high levels of distress. The brief symptom interview will be conducted by trained graduate students or project staff under the supervision of Dr. Stark. If a girl in the study is reporting distress on the questionnaire or brief symptom interview, the parents will be contacted by phone to ensure the girl's well-being. ACTION staff or the school counselor may discuss your child's further participation in this research project at that time. For all girls who complete the questionnaire or interview and do not show significant symptoms of distress, parents will receive a letter stating those findings.

The purpose of the project is to determine whether the ACTION coping skills program is more effective than no counseling, and whether parent participation makes the program more effective. In addition, we are trying to learn whether adding follow-up meetings prevents future distress. The benefits to participants include possible participation in the ACTION program and helping advance our understanding of how to best help young girls manage emotions and stress, solve problems and feel better about themselves.

Participation in the project will not cost you anything and there will not be any financial compensation for participation. There are not any risks of harm from completing the questionnaire. There are no anticipated risks from completing the brief symptom interview. In fact, the procedure is designed to quickly identify and assist children who are in distress. All materials and forms will be stored in locked file cabinets in a secure office at UT to protect confidentiality.

If a child reports that she is at risk of hurting herself or others, her parents would be immediately informed and she would immediately talk with her school counselor. In addition, she would be evaluated by one of the consulting psychiatrists at no cost to the family.

If you choose to participate, you or your daughter may stop participation at any time. Participation in the study is entirely voluntary. You are free to say that you do not want to participate by returning this form indicating on the back of this page that you do not want to participate. You can refuse to participate without penalty or loss of benefits to which you and your daughter are otherwise entitled. It will not affect your relationship with your child's school or the University of Texas.

Researchers are required by Texas state law and professional ethics codes to report to Child Protective Services (or other appropriate regulatory agency) all instances of alleged child abuse and neglect. Please note that if your child completes the screening questionnaire or interview and is believed to be at risk for emotional, psychological or possible physical harm or neglect, then the investigator will report this information to the attending physician, Child Protective Services, and any other necessary regulatory agencies. Please note when a child reports neglect or being harmed, participants cannot stop the referral of their child's case to the authorities and any subsequent actions taken.

If you have any questions about the study, you can call Kevin Stark, Ph.D. at (512) 471-0267, your school counselor, or principal.

If you have questions about your rights as a participant, please contact Lisa Leiden, Ph.D., Chair, The University of Texas at Austin Institutional Review Board for the Protection of Human Subjects, (512) 471-8871.

Sincerely,

_____

Researcher's Signature

_____

Principal's Signature

_____

Date

PLEASE KEEP THIS LETTER FOR YOUR RECORDS

Please check the appropriate box indicating that **YES** you have read this letter and are giving permission for your daughter to participate in the ACTION project at your child's school by completing the screening questionnaire and brief symptom interview, or **NO**, you have read this letter and you do not want your daughter to complete the questionnaire or interview. Regardless of your decision, please sign this form and return it to your child's teacher.

PLEASE RETURN THIS FORM TO YOUR CHILD'S SCHOOL WITH YOUR PREFERENCE NOTED BELOW:

_____**YES** I **give my permission** for my daughter to participate by completing the screening questionnaire and brief symptom interview.

_____**NO** I **do not give my permission** for my daughter to participate by completing the screening questionnaire or brief symptom interview

_____ _____

Parent's Signature Date

_____

Child's Name (please print)

We will provide feedback for all participants. Please provide information below if your child will be participating.

Parent/adult guardian name(s): _____

Mailing address: _____ City/ZIP:_____

Parent phone number(s) in case we need to reach you with a concern about your child:

Home_____cell_____work_____

Youth Assent Form for Screening (Depressed Group)

I agree to complete a questionnaire about my thoughts, feelings, and behaviors. This questionnaire has been explained to my parent or guardian and he or she has given permission for me to participate. I may decide at any time that I do not wish to participate and that it will be stopped if I say so. My specific responses will not be shared with anyone. However, general information about how I am doing and feeling may be shared with my parent.

When I sign my name to this page I am indicating that I read this page and that I am agreeing to participate.

_____ _____

Your Signature Date

_____

Please Print your Name

Date of Birth _____

Month Day Year

Parent Consent Form for K-SADS-IVR (Depressed Group)

Dear Parent,

Per our contact with you regarding your daughter's responses to the screening questionnaire and brief symptom interview, we are requesting permission for you and your daughter to complete a more comprehensive interview that will help us determine more accurately whether she is experiencing serious emotional concerns or whether she was not feeling well on the days that she completed the questionnaire and brief interview. The interviews will be conducted by trained doctoral psychology students under the supervision of Kevin Stark, Ph.D., licensed psychologist. The interview of your daughter will be completed in a room at school that will protect her privacy. It takes 45 to 90 minutes to complete and asks specific questions about how your daughter is feeling, thinking and behaving and a range of experiences she may have encountered. The interview with you will cover the same topics and can be conducted in person or over the phone if that is preferable, at a time that is convenient for you. Participation in the interview will not cost you anything and there will not be any financial compensation for participation. Completed interviews will be stored in locked file cabinets in a secure office at UT to protect confidentiality. If she is, she may be eligible for participating in the ACTION program. If this wouldn't be the best program for her, we will provide you with possible resources from within the school and the community.

If a child reports that she is at risk of hurting herself or others, her parents would be immediately informed and she would immediately talk to her school counselor. In addition, she would be interviewed by Kevin Stark, Ph.D., a licensed psychologist, or one of the consulting psychiatrists at no cost to the family. If a child reports that she is being hurt, the school's standard procedures for reporting such instances to the relevant state agency would be followed.

The purpose of the project is to determine whether the ACTION coping skills program is helpful, and whether parent participation makes the program more effective. In addition, we are trying to learn whether adding follow-up meetings prevents future distress. If you have any questions about the study, you can call Kevin Stark, Ph.D. at (512) 471-0267 your school counselor, or principal.

If you choose to participate, you or your daughter may stop participation at any time. Participation in the study is entirely voluntary. You are free to say that you do not want to participate by returning this form indicating that you do not want to participate. You can refuse to participate and this decision will not affect your relationship with your child's school or the University of Texas.

Researchers are required by Texas state law and professional ethics codes to report to Child Protective Services (or other appropriate regulatory agency) all instances of alleged child abuse and neglect. Please note that if your child completes the screening questionnaire or interview and is believed to be at risk for emotional, psychological or

possible physical harm or neglect, then the investigator will report this information to the attending physician, Child Protective Services, and any other necessary regulatory agencies. Please note when a child reports neglect or being harmed, participants cannot stop the referral of their child's case to the authorities and any subsequent actions taken.

If you have questions about your rights as a participant, please contact Lisa Leiden, Ph.D., Chair, The University of Texas at Austin Institutional Review Board for the Protection of Human Subjects, (512-471-8871). Let him know that you are enquiring about the study entitled "Helpfulness of the ACTION Coping Skills Program with and Without Parent Participation."

Please check the appropriate box indicating that **YES** you have read this letter and are giving permission for you and your daughter to participate by completing the interview, or **NO** you do not want to complete the interview nor do you want your daughter to complete the interview. Regardless of your decision, please sign this form and return it to your child's teacher. You will be given a copy of this permission letter to keep for your records.

☐ **YES** I give my permission for my daughter and I to participate by completing the interview.

☐ **NO** I do not give my permission for my daughter and I to participate by completing the interview.

_____ _____

Parent's Signature Date

_____ _____

Researcher's Signature Date

_____ _____

Principal's Signature Date

Youth Assent Form for K-SADS-IVR (Depressed Group)

I agree to participate in an interview about my thoughts, feelings, and behaviors. It has been explained to me that this interview will help to determine whether the ACTIION counseling program may be helpful for me. This interview has been explained to my parent or guardian and he or she has given permission for me to participate. The interview will be stopped if I say so. Specific things that I say during the interview will not be shared with anyone. However, general information about how I am doing and feeling may be shared with my parent for the sake of talking about what to do to help me.

I will be asked to complete an interview about my current feelings, behaviors, and thoughts. By signing this form I am giving permission for the interview to be audio-taped for the purpose of being sure that the interview was conducted correctly. These tapes will be erased as soon as the ACTION program is completed.

It is okay if I decide to stop my participation in this interview at any time. When I sign my name to this page I am indicating that this page was read to me and that I am agreeing to participate.

| | |
|---|---|
| Child/Adolescent Signature | Date |
| Staff/Researcher Signature | Date |

Parent Consent for Pre-treatment Assessment and Treatment (Depressed Group)

Dear Parent,

Based on results of the screening and interview that you and your daughter have participated in so far, we are requesting permission for you and your daughter to continue and participate in the evaluation of the ACTION coping skills program. If you give your permission for your daughter to participate, she will be randomly assigned to one of three groups: (1) ACTION coping skills program, (2) ACTION coping skills program plus parent participation, or (3) wait to receive the program in about 12 weeks.

If your daughter is randomly assigned to the ACTION coping skills program, she will meet 20 times over the next twelve to sixteen weeks with a group of girls to participate in a counseling program that is designed to teach her problem solving, coping skills for managing her emotions and stress, and strategies for thinking more positively about herself and things in general.

If your daughter is randomly assigned to the counseling plus parent participation, she will meet 20 times over the next twelve to sixteen weeks with a group of girls to participate in a counseling program that is designed to teach her problem solving, coping skills for managing her emotions and stress, and strategies for thinking more positively about herself and things in general. In addition, you would be asked to attend a total of 10 meetings over this period that will last about an hour and a half. The parent meetings will be held at school after hours and daycare and refreshments will be provided at no expense. During these meetings parents will have a chance to learn the skills that their daughter is learning, and parents will learn strategies for helping their daughter to use the skills.

The girls will meet in a small group during an elective class. Each meeting will last one class period. Steps have already been taken to ensure that she will receive any class materials that she misses. The group meetings will be led by a trained doctoral psychology student or Ph.D. level therapist and a counselor from your daughter's school. The group leaders will be supervised by Kevin Stark, Ph.D. It is not expected that your daughter will experience any discomfort or risks from participating in the ACTION coping skills program. In fact, past experience with the program indicates that the girls enjoy participating and benefit from it.

If your daughter is randomly assigned to wait to receive counseling in about 12 weeks, we will take the following steps to ensure that she is okay. A doctoral psychology student will meet with her each week to monitor how she is doing, she will be discreetly observed in school at lunch or recess for about fifteen minutes per week, and the staff member will check-in with her teacher each week. In addition, every other week, the staff member will check with you to see if you have any concerns. At the end of the waiting period, she will have the opportunity to participate in the coping skills program. If at any point during this waiting period she reports feeling worse or you would like to seek counseling elsewhere, we will provide you with information about community and school resources. You have

the option at anytime to seek additional services including consultation with one of the project's consulting psychiatrists at no cost to you.

We will be monitoring each girl's progress and report this information to two psychiatrists who are being paid by us to oversee each child's welfare. If a participant is not improving as a result of the program, then parents will be informed and we will meet with you to discuss other options for providing your daughter with help. If you would like information about medications that might be of assistance, the psychiatrists are available to meet with you and discuss these options at no cost to you.

To determine whether the ACTION coping skills program is helpful, we are asking you and your daughter to complete some questionnaires that help guide, and evaluate the effectiveness of the ACTION program. The questionnaires will take your daughter about one hour to complete. It will take you about 30 minutes to complete your questionnaires. We are asking you to complete the questionnaires so that we can determine whether participation in the ACTION program also benefits you and your family. The questionnaires have been completed by other children and adults without any discomfort. In order to assess the potential benefits of ACTION on school performance, our staff collects the following general education information: grades from reporting periods, attendance, and discipline information for participants.

For one year after completion of the ACTION program, your daughter will have the opportunity to meet with her group and apply the skills to the new problems and stresses that she faces as she grows up and navigates her way through the many difficulties of being a teenager. The groups will meet three times a semester over the rest of the course of the study. In addition, to determine if your daughter needs additional help, once a year, we will ask you and your daughter to complete the interview and the questionnaires to determine whether we have achieved the goal of preventing the difficulties from recurring. Each time in the future that you and your daughter are asked to complete the measures, you will be paid $25.00 and your daughter will be paid $20.00.

If a participant reports at any time that she is feeling like she would like to hurt herself or someone else, then, she would be immediately interviewed by a trained staff member and the school counselor. In addition, if there is concern about a child's safety, the staff member would immediately contact the parents and Kevin Stark, Ph.D. or one of the consulting psychiatrists. If at all possible, the psychiatrist on call would be available to meet with the girl and her parents to further evaluate the situation and to provide you with information about resources from within the community that could be of help. If it is not possible to immediately meet with one of the mental health professionals, then it would be recommended that the child and parents pursue the conventional procedure of driving to the emergency room of a local hospital. If a participant reports that she is being hurt, then the staff member and school counselor would follow the school's standard procedures for reporting such instances to the relevant state agency.

All of the services that we provide are available to you at no cost to your family.

The benefits to you and your daughter are that she may learn skills and strategies that will help her to be happy and healthy throughout adolescence. Similarly, you may learn strategies for helping her to successfully make it through adolescence. The benefit to society is that it will help us to determine whether teaching girls who are experiencing depression these skills helps to reduce the depression and whether it is even more helpful to involve parents. Furthermore, since girls are at very high risk for becoming depressed between the ages of 13 to 15, the results of this study will help us learn whether there is a procedure for preventing this from occurring.

The ACTION program meetings are audiotaped for quality assurance purposes. To ensure confidentiality, the following steps will be taken: (a) the cassettes will be coded so that no personal identifying information is visible on them; (b) they will be kept in a locked file cabinet in a secure office at UT; (c) they will be reviewed only for research purposes by the relevant research staff; and (d) they will be erased after they are checked and the study has been completed. Identifying information will be removed from all of the assessment materials completed during the study and the materials will be stored in a locked file cabinet in a locked research office at UT.

Participation in the ACTION coping skills program is entirely voluntary. You are free to refuse to be in the study, you are free to discontinue participation for any reason at any time, and your refusal or discontinuation will not influence current or future relationships with The University of Texas at Austin or your child's school district

Researchers are required by Texas state law and professional ethics codes to report to Child Protective Services (or other appropriate regulatory agency) all instances of alleged child abuse and neglect. Please note that if your child is believed to be at risk for emotional, psychological or possible physical harm or neglect, then the investigator will report this information to the attending physician, Child Protective Services, and any other necessary regulatory agencies. Please note when a child reports neglect or being harmed, participants cannot stop the referral of their child's case to the authorities and any subsequent actions taken.

If you have any questions about the study, you can call Kevin Stark, Ph.D. at (512) 471-4407, your school counselor, or principal. You may also contact the project coordinator, Jennifer L. Hargrave, Ph.D., with questions, concerns, or to withdraw from the study at any time at (512) 471-0218.

If you have questions about your rights as a participant, please contact Lisa Leiden, Ph.D., Chair, The University of Texas at Austin Institutional Review Board for the Protection of Human Subjects, (512) 471-8871. Let her know that you are enquiring about the study entitled "Helpfulness of the ACTION Coping Skills Program with and Without Parent Participation."

Please check the appropriate box indicating that **YES** you have read this letter and are giving permission for you and your daughter to participate in the ACTION coping skills program and to complete the questionnaires, or **NO** you do not want to participate in the ACTION coping skills program and you do not want to complete the questionnaires. Regardless of your decision, please sign this form and return it to your child's counselor. With this permission letter, you should have received a copy to keep for your records.

NOTE: TWO COPIES OF THIS LETTER ARE PROVIDED; ONE IS TO KEEP FOR YOUR RECORDS

PLEASE RETURN ONE COPY OF THIS PORTION TO THE SCHOOL COUNSELOR

☐ **YES** I give my permission for my daughter, _____, and me to participate in the ACTION coping skills program and to complete the questionnaires. This includes permission for ACTION staff to access report card information, discipline referrals, and attendance records during participation.

☐ **NO** I do not give my permission for my daughter, _____, to continue any further with the ACTION project.

_____ _____

Parent's Signature Date

_____ _____

Kevin D. Stark, Ph.D. Date

NOTE: TWO COPIES OF THIS LETTER ARE PROVIDED; ONE IS TO KEEP FOR

YOUR RECORDS

Parent Consent and Youth Assent (Control Group)

Dear Parent,

You and your child are invited to participate in a study about thoughts, feelings, relationships and psychological adjustment in children and adolescents. We are researchers at The University of Texas at Austin, Department of Educational Psychology. We are looking for children and adolescents to participate in the study. Your child was selected as a possible participant because she is in the relevant age range, and is a student enrolled in the Pflugerville Independent School District. The purpose of this study is to learn more about the relationship between thoughts, behaviors, family characteristics and emotional adjustment. Approximately 25 students from PISD will have an opportunity to participate. Selection for participation will be determined by achieving the closest match in terms of age, gender, ethnicity, and family composition to youngsters who previously participated in the study. This study will be conducted under the supervision of Kevin Stark, Ph.D., a Professor at the University of Texas at Austin and will be coordinated by staff at your child's school. If you and your student are chosen to participate, your family will receive an honorarium of $50.00 immediately following completion of the measures.

Should you decide to participate, a researcher from The University of Texas will ask you and your child to participate in a semi-structured interview regarding your child's feelings and behaviors. For each of you, the interview should take, at most, 45 minutes to complete. You and your child will also be asked to complete a number of questionnaires regarding your child, your family, and yourselves. Your child will be asked to complete a questionnaire that assesses his or her adjustment (Beck Youth Inventory), self-perceptions, things in general and the future (Cognitive Triad Inventory), a questionnaire that assesses your child's thoughts about what causes good and bad things to happen (Children's Cognitive Styles Questionnaire), a questionnaire about his or her perceptions of the way the family works (Self-Report Measure of Family Functioning), a questionnaire about his or her perceptions of messages that parents communicate (Family Messages Measure), and a questionnaire about stressful experiences (Life Events Questionnaire). In addition, your child would be asked to complete a story telling task entitled the Thematic Apperception Test. The school counselor has copies of all of these materials available for your review at this time as well as any time in the future. You would be asked to complete a questionnaire about your own emotional well-being (Symptom Checklist 90-R), a questionnaire about your self perceptions, things in general and the future (Cognitive Triad Inventory) and a questionnaire about your perceptions of the way your family functions (Self-Report Measure of Family Functioning). You and your child may complete the interviews and questionnaires in more than one meeting if you would like to do that. In sum, it would take you approximately an hour and a half to two hours to complete the interview and the measures and a total of 1.5 to 2.5 hours for your child to complete the interview and measures. The interview, questionnaires, and story telling task are commonly used to evaluate the emotional functioning of youths and adults. They have been completed by hundreds of individuals without any adverse

effects. This study will be beneficial in that it should serve to identify psychosocial factors relevant to emotional disorders in children and adolescents, an area largely unexplored to date. Any information in connection with this study that can be identified with you will remain confidential and will be disclosed only with your permission. However, if your child reports an intent to harm herself or others, we would immediately notify the school counselor and you.

For research purposes, we would like your permission to audio-tape the interviews. The tapes are used to determine whether the interview was administered correctly. The tapes will be kept in a locked file cabinet without any identifying information on them and they will be erased once the study has been completed.

Your decision whether or not to participate will not affect your present or future relations with The University of Texas or Pflugerville Independent School District. If you decide to participate, you are free to discontinue participation at any time. Should you decide to allow your child or adolescent to participate, he/she will also have a chance to decide whether or not to participate.

If you have any questions, feel free to contact Dr. Kevin Stark. Dr. Stark can be reached by telephone at 512-471-4407, or in writing: SZB 504, The University of Texas at Austin, Austin, TX 78712. If you have any questions or concerns about your treatment as a research participant in this study, call Professor Clarke Burnham, Chair of the University of Texas at Austin Institutional Review Board for the Protection of Human Research Participants, at (512) 475-7129.

Please keep this form for your records.

*****PLEASE RETURN THIS FORM TO YOUR SCHOOL COUNSELOR*****

You are making a decision whether or not to participate and to allow your child to participate. Your signature indicates that you have read the information provided and have decided to participate and to allow your child to participate should (s)he choose to. By signing this form you are agreeing to participate both by completing the questionnaires and the clinical interview; you are also giving permission for the interview to be audio-taped. You may withdraw at any time after signing this form, should you choose to discontinue participation in this study.

_____ _____

Signature of Parent or Legal Guardian Date

_____ _____

Signature of Staff/Researcher Date

_____

Phone Number (to be contacted over the summer)

*****PLEASE RETURN THIS FORM TO YOUR SCHOOL COUNSELOR*****

Child/Adolescent Assent Form

I agree to participate in a study that is interested in evaluating the relationship between thoughts, feelings, and interpersonal behaviors in children and adolescents. I understand that this study has been explained to my parent or guardian and that he or she has given permission for me to participate. I understand that I may decide at any time that I do not wish to continue this study and that it will be stopped if I say so. Information about what I say and do will not be given to anyone else unless I say so.

I understand that I will be asked to complete an interview about my current feelings, behaviors, and thoughts as well as a number of questionnaires about myself and my family. I understand that by signing this form I am giving permission for the interview to be audio-taped for research purposes and that these tapes will be erased as soon as the study is completed.

I understand that it is all right if I decide to stop my participation in this study at any time. When I sign my name to this page I am indicating that this page was read to me and that I am agreeing to participate in this study. I am indicating that I understand what will be required of me and that I may stop my participation at any time.

_____ _____

Child/Adolescent Signature Date

_____ _____

Staff/Researcher Signature Date

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